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# CARJOURNAL

and OPERATION & MAINTENANCE
JUNE 1930





Dodge Trucks serve long! Dodge Trucks serve at low cost! Proof of the first statement is clinching proof of the second—experienced business men will not run a truck for tens of thousands of miles unless costs continue low.

Thousands of speedometers prove that Dodge Trucks have long, active lives. High speedometer readings therefore prove that owners find these workers economical.

TLI :C57

# BROCKWAY-INDIANA TRUCKS



# Inventories and service problems simplified by Brockway-Indiana policy

Fleet owners and truck distributors have good reason for turning to Brockway-Indianas. There's never any complication of dealers' inventories or of service problems through the selfish changing of units to effect manufacturing economies! No danger that the trucks put into service today will be obsolete three or four years hence.

Brockway-Indianas are a stabilized line—designed and engineered with due regard for the changing requirements of the next five years—and possible only because of the close cooperation and more permanent alignment of our organization with the foremost parts manufacturers.

Whether you are buying or selling trucks get all the facts about Brockway-Indianas. Visit nearest branch or write Eastern Division, Brockway Motor Truck Corporation, Cortland, N. Y.; Western Division, Indiana Truck Corporation, Marion, Indiana; Executive Office, 420 Lexington Avenue, New York City; General Offices, Cortland, New York.

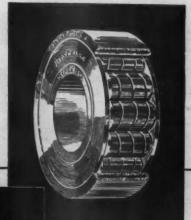
An international institution having 40 direct factory branches and 350 dealer connections in America and 135 distributors in 85 foreign countries. Real convenience for the truck buyer! Unusual financial strength and stability. Now one of the three largest exclusive manufacturers of motor trucks—and growing all the time.

One-to-ten-ton Fours and Sixes,

Four-wheelers and Six-wheelers. \$995 to \$9750, f.o.b. factories. A few desirable franchises are still open at home and abroad. Write or wire!

POWER MATCHED TO INDUSTRY

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17

# GENERAL MOTORS TRUCKS

A glowing tribute to Hyatt performance is evidenced in the consistency with which General Motors Trucks have employed Hyatt Quiet Roller Bearings for nearly twenty years.

The smoothness of power, and durability, of General Motors Trucks are reflections of the efficient manner in which Hyatts harmonize with the objectives of General Motors engineers.

Long association with such leaders in the industry is naturally a source of pride to Hyatt. And this feeling is heightened by the gratifying knowledge that Hyatt Quiet Roller Bearings give an overflowing measure of satisfaction.

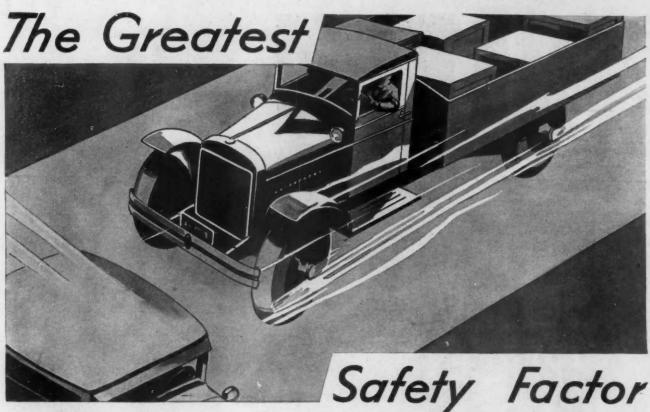
HYATT ROLLER BEARING COMPANY

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HYATT

QUIET ROLLER BEARINGS

PROTECTING QUALITY PRODUCTS



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in TRUCKING

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#### COMMERCIAL CAR JOURNAL and OPERATION & MAINTENANCE

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#### The

Don't Back the Wrong Horse!

The Hi-Lo HORSE is a real winner-you can depend on it. A pair of Hi-Lo HORSES in your shop will release your jacks for lifting jobs. Built entirely of steel -plate and drop. forged - the Hi - Lo HORSE is adjustable for either frame or axle work. Models range from 91/2 to 411/2 inches in height.

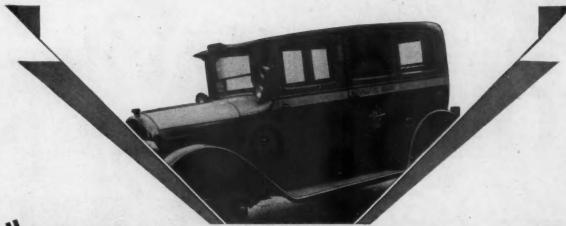


### The Best Bet in the Jack Field!



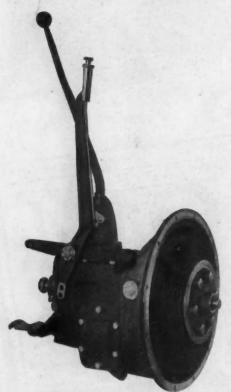
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THE OIL JACK CO., INC. - NEW JERSEY



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## PER YEAR FOR TRANSMISSION EXPENSE"



Model TU - 12 — Fuller, 3 speed Taxicab Transmission. Used on all cabs manufactured by Checker Cab Manufacturing Corporation.

This model is also standard equipment on all "Safety" and "Paramount" Cabs. THERE is no better recommendation of any product than "proven performance".

Here's the proof! Mr. John F. Donnelley, President of the Red Top Cab Co., Inc., of Providence, R. I., writes to Checker Cab Manufacturing Corporation as follows:

"Since 1926 we have used Checker Cabs exclusively in a territory where steep grades put transmissions to a gruelling test.

- Your transmissions have stood up wonderfully.

— Our books show that during this period we have spent, for transmission repair parts, a trifle less than 50 cents per cab per year."

You can eliminate transmission troubles and reduce operating expenses of Cabs and Trucks with Fuller Transmissions. Ask our engineering department for recommendations.

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**TRANSMISSIONS** 

FROM ROUGH BILLET



TO FINISHED PRODUCT



# 201,000 Beeeps

testify to the tone quality, the stamina, of this horn..

PROMINENT Baltimore fleet owner is responsible A for this advertisement.

Some time ago his Electric Test Department set up a Robert Bosch FD-type Vibro-Balanced Horn on an automatic testing device. They wanted to see how many times the horn would be-e-e-p before it expired -as a test of dependability.

201,000 be-e-e-ps later they tired of hearing the horn and turned it off! It had been subjected to the equivalent of at least two years' hard service on a bus or truck. equal to several times that in ordinary operation. It was in perfect condition and still blowing lustily ! In fact its tone quality is so good that it still sounds like a new horn!

This doughty horn has been mounted and is now on display at our Long Island City showrooms. People are still blowing it. And just out of curiosity we have attached it to an automatic counter to see how many times it will go on be-e-e-p, be-e-e-ping.

All four types of Robert Bosch Vibro-Balanced Horns are outstanding for their stamina and dependability. Many well known fleet owners use them exclusively along with Robert Bosch Spark Plugs and Magnetos.

Write today for free folder which tells you more about the ten horn essentials found in every Robert Bosch Vibro-Balanced Horn.

All Robert Bosch Vibro-Balanced Horns bear the full name "ROBERT BOSCH" and this trademark of Robert Bosch A.-G.



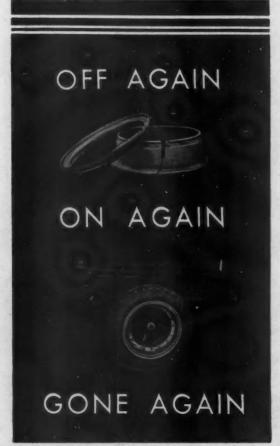
ROBERT BOSCH MAGNETO CO., INC. Long Island City, N. Y. 3603F Queens Blvd.,

Robert Bosch Vibro-Balanced HORNS





After it Be-e-ep-ed in Baltimore



## GOODYEAR TYPE K RIMS SPEED YOUR

## TIRE CHANGES

TYPE "K" rims operate easily. They are built in two parts—one split and one endless. They stay firmly

locked, but when you want them off they can be removed in three minutes.

Type "K" rims are mechanically right, having maximum strength at points of greatest strain. They are light in weight; easy to handle; are safe on high speed trucks and buses.

Goodyear Type "K" single and dual change-over equipment, for converting from solid to pneumatic tires, is a recognized standard among tire dealers; easy to apply—will reduce your cost of operation.

Any tire dealer can secure this equipment from the special wheel and rim distributor in his locality. Write now for complete information to Akron, Ohio, or Los Angeles, California.

"THE MAN WHO CHANGES THE TIRES LIKES GOODYEAR TYPE 'K' RIMS"



TYPE K TRUCK

AND BUS RIM EQUIPMENT

# the NEW a.C.f.

SERIES 45 BUSES
ARE EQUIPPED WITH

LONG CLUTCHES

AND RADIATORS

LONG MANUFACTURING COMPANY, Detroit, Michigan

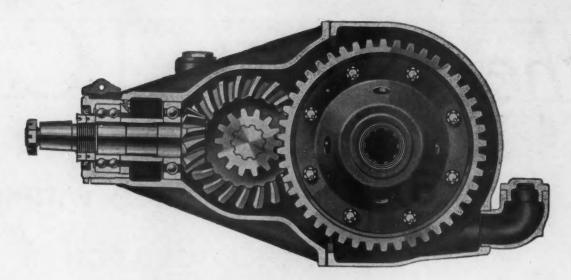




LONG PRODUCTS
AUTOMOTIVE CLUTCHES AND RADIATORS

The Commercial Car Journal and Operation & Maintenance

June, 1930



F OR you who bought the vehicle—there's long life, sturdy performance, low operating cost

AXLES

For you who sold it—there's lower selling cost and the Good Will of the buyer

AXLES

For you who built it—there's performance of the kind you're glad to be responsible for

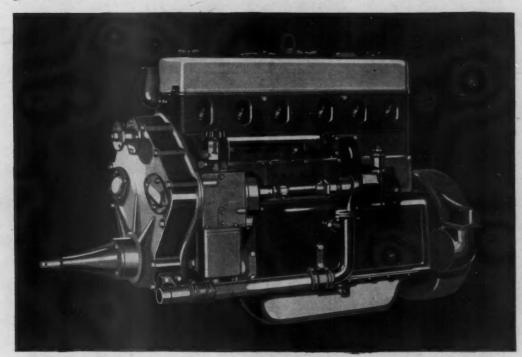


## WISCONSIN AXLE COMPANY

OSHKOSH, WISCONSIN

# Specify CONTINENTAL

Practical experience means Power that will push your Profits UP!



CONTINENTAL power is designed for specific purposes. You will find that proper power—fitted for its job—cuts your costs and boosts your profits. ¶Let past performance guide you.

CONTINENTAL MOTORS CORPORATION
Offices: Detroit, Mich., U.S.A. Factories: Detroit and Muskegon
The Largest Exclusive Motor Manufacturer in the World

Continental Motors Corporation





# UNDER CONTROL Reduces Hauling Costs ..

Traffic conditions today demand speed-speed to avoid congestion—speed to increase the number of trips per day.

And to make this speed possible there must be safety instant control—quick positive stopping.

B-K Vacuum Brake Boosters transform into brake pressure, engine power that otherwise goes to waste. They utilize the vacuum from the intake manifold.

Effortless depression of the brake pedal controls this power from gradual deceleration to quick smooth stopping.

Fleet and truck owners know the money value of speed and the positive brakes that make speed possible.

They know the saving that safety provides.

Leading manufacturers, realizing that B-K Vacuum Brake Boosters meet a decided demand, are adopting them as standard equipment.

Dealers appreciating their wonderful appeal in demonstration are applying B-K Vacuum Brake Boosters to carsof all makes and with all types of brakes.

Our distributor's franchise may be available in your

#### BRAGG-KLIESRATH CORPORATION

Oueens Boulevard & Harold Avenue LONG ISLAND CITY, NEW YORK

(Division of Bendix Aviation Corporation)

## NEW DEPARTURE BALL BEARINGS

Tough going serves only to emphasize their wonderful Stamina



Just as virile manhood revels in rough-and-tumble action, so New Departure Ball Bearings seem to find joy in the hardest bearing jobs. As in all thorough-breds, the reason may be traced to sturdy stock and careful breeding. The stock is electric furnace, high carbon chrome alloy steel, the toughest bearing metal known to metallurgists . . . the breeding is the ultra-scientific heat treating and fabrication in the hands of an organization of technicians and skilled craftsmen. The New Departure Mfg. Co., Bristol, Conn., Chicago, Detroit, San Francisco.

## RUGGED · POWERFUL · MODERN

## The New 21/2-1 INTERNATIONAL Model W-1



### Brief W-1 Facts

Wheelbase: 130, 148, 170, 185, or 200 inches.

Engine: Valve-in-head; overhead camshaft; powerful, simple, and unusually accessible.

Clutch: Single plate with built-in vibration damper.

Transmission: 5 speeds forward, 2 reverse.

Final Drive: Double reduction gear type.

Springs: Semi-elliptic, front and rear. Auxiliary rear springs, quarter elliptic.

Brakes: 4-wheel mechanical.

THE new International W-1 is a handsome truck—completely in tune with modern-day industry—powered and geared to pull into and out of anything the day's work offers. It has five speeds forward and two reverse.

Under the new hood you'll find an unusually accessible, heavy-duty engine, thoroughly in keeping with the truck's powerful appearance. Vibrationless, it develops great power at low engine speed with surprising fuel economy. Reserve strength to match the engine's brute power has been built into every chassis member, into the clutch, transmission, driveshaft, rear axle assembly—and into the truck as a whole. In all its parts and features, the new W-1 is a truck to shoulder the hardest work in its class and walk away with it.

You'll want to get acquainted with the new W-1. See it at the nearest showroom or ask us to send you a folder.

The new W-1 and other International models, ranging from ¾ ton up, are sold and serviced by 161 Company-owned branches in the United States.



#### INTERNATIONAL HARVESTER COMPANY

606 So. Michigan Ave.

of America

Chicago, Illinois

# INTERNATIONAL TRUCKS



The glamorous vocation on which the motor truck is just beginning to exert a revolutionizing influence is the circus. Besides cutting transportation costs it will effect a remarkably beneficial change in the mode of circus life. The largest completely motorized circus has just taken to the road (see page 26) and other large circuses have similar plans.

## WHEN

# PNEUMATICS FA' DOWN AND GO BALLOON

By JAMES W. COTTRELL

Satisfactory Changeover From High-Pressure Tires Can Be Accomplished By Conforming to Recommended Sizes, Mounting and Spacing

#### TABLE I—TIRE CHANGEOVER

High-Pressure Pneumatic to Balloon Equivalent

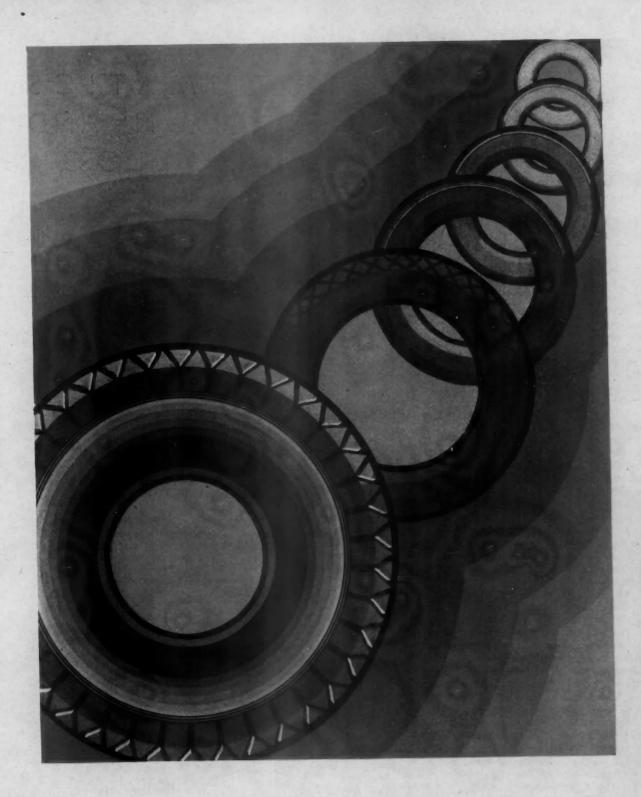
	-HIGH PF	RESSURE-		7		-BALLOO!	N	
Tire Size	Maximum Load, Lb.	Pressure for Max. Load	Rim Size	Wheel Size	Rim Size	Tire Size	Maximum Load, Lb.	Pressure for Max. Load
30 x 5 (6-p	ly) 1,575	75	5	20	5	6.00/20	1,400	45
30 x 5	1,700	80	5	20	5	6.50/20	1,650	50
32 x 6 (8-p	ly) 1,950	80	5	20	5	7.00/20	1,900	55
32 x 6	2,200	90	6	20	6	7.50/20	2,100	55
34 x 7	2,800	100	7	20	7	8.25/20	2,550	60
					7	9.00/20	3,250	65
36 x 8	3,600	110	8	20	8	9.75/20	3,900	70
38 x 9	4,500	120	8	20	9-10	10.50/20	4,700	75
*			9-10	20				
40 x 10	5,500	130	9-10	20	9-10	11.25/20	5,450	- 75
36 x 6	2,500	90	6	24	7	8.25/24	2,950	60
38 x 7	3,200	100	7	24	7	9.00/24	3,650	65
40 x 8	4,000	110	8	24	8	9.75/24	4,400	70
42 x 9	5,000	120	9-10	24	9-10	10.50/24	5,200	75
44 x 10	6,000	130	9-10	24	9-10	11.25/24	6,050	80

With two exceptions balloon tires listed may be mounted on same rims as corresponding high pressure tires. Some tire makers recommend use of 22 in. diameter balloons to replace 24 in. high pressure tires.

CERTAIN dealer almost lost an order for a truck, one of those rare all-cash-no-trade-in deals, because he added cost of a wheel change to price of a job to be equipped with balloon tires instead of high-pressure pneumatics, which were standard equipment. He had a lot of tall explaining to do when the prospect, tipped off by a keen competitor who knew that balloons would fit on the same rims, took him to task for attempting to put something over. The discomfited dealer hurriedly looked up some tire changeover data, frankly admitted his mistake, and saved the order.

Other dealers have been jolted into realization that tires are a major issue in selling trucks these days. Many who sought to remain neutral when balloons attacked the wellestablished position of high-pressure tires are finding that the tire question must be settled on almost every sale. A host of owners know balloons from experience, a lot of others crave facts on the subject so that they may decide without experimenting.

Deciding whether to change high-pressure tires on a truck now in use to balloons is a different problem than choosing tire equipment for a new job, although the same general principles apply in both cases. Tires on a new



truck can be chosen for the service for which the truck is intended. On an old job consideration must be given to other factors, such as wheel sizes and clearance between tire and obstructions. A balloon tire is larger than the high-pressure tire which it replaces and therefore users must be careful in measuring clearance and in placing the balloon so that it will not crowd its neighbor, if it be one-half of a dual pair.

Balloons can be used on the same wheels and rims as high-pressure pneumatics in many instances. Interchangeability of these two types of tires is shown in Table 1. High-pressure tire size is given first with carrying capacity, rim size and wheel size, followed by the corresponding balloon tire size or sizes. For illustration, a 32 x 6 high-pressure tire may be replaced with a 7.50/20 balloon on the same rim. A 9-10 in. rim, included in the table, is now standard for 10.50, 11.25 and 12.00 balloons

and 9 and 10-in. high-pressure tires.

In 24-in. wheel sizes, such as 36 x 6 high-pressure and larger, it is possible to install balloons on the same rims as high-pressure tires, as indicated in the table. However, it should be noted that the outside diameter of a balloon is larger than that of a high-pressure tire of the same carrying capacity. For illustration, a 40 x 8 high-pressure has an overall diameter of about 42% in. and a 9.75/24 balloon, which fits the same rim, is almost 44% in.

Balloon tires on 22-in. rims, now coming into greater production, provide low-pressure tires of about the same carrying capacity as high-pressure tires on 24-in. rims without increasing overall diameter of tires. For illustration, a 9.75/22 balloon has practically the same overall diameter as a 40 x 8 high-pressure.

Use of a 22-in. base balloon in place of a high-pressure tire calls for a wheel change. On new equipment this imposes no great difficulties and on demountable wheels it is comparatively simple.

Some advocates of 22-in, wheels point out that these wheels give greater clearance between brake drums and tires than 20-in, wheels, and this may be an advantage in hilly country, where brake drums become plenty hot on long trips.

Operating conditions and convenience may determine whether a large single tire or two smaller tires are to be used on rear wheels. There are advantages in having only one size of tire on a vehicle, and this, no doubt, explains the popularity of combination of a single size tire with singles front and duals rear. Large single tires are preferred for rutty or high-crowned roads in many instances. Changing inside tire of a pair of large duals is no picnic, and use of large singles simplifies this task a bit.

Table 3 shows size of a single high-pressure pneumatic to carry a given load, the equivalent single balloon and the nearest equivalent dual balloon combination. The table shows that a single 36 x 8 high-pressure will carry 3600 lb., which we can replace with a 9.75/20 balloon or two 7.00/20 balloons, the latter giving 200 lb. greater capacity than the single 36 x 8 in.

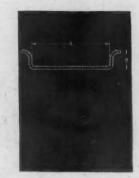
Possibility of oversizing tires on dual rear wheels and replacing high-pressure tires with balloons depends upon space between tires. Measurement, center to center, of dual tires, known as dual spacing, adopted as standard by the Tire & Rim Association, is given in Table 4. Dual 5-in. high-pressure tires

WHEN

## PNEUMATICS FA' DOWN AND GO BALLOON

Table 2—Dimension for Identifying
Tire Size of Rims

	THE SIZE OF KILL	19
Rated Rim		
Size	A	В
5	3.75 in.	1.00 in.
- 6	4.33	1.25
7	5.00	1.312
8	6.00	1.50
9-10	7.33	1.75
11	8.37	1.75



Width and height of flange of rated sizes of rims for high-pressure and balloon tires.

Table 3—Single High-Pressure Pneumatic and Balloon Equivalent

Carrying	Single High- Pressure Tire	Single Balloon	Dual Balloon	Load Capacity
Capacity	Size	Tire Equivalent	to Carry Load	Dual Balloons
2,800	34 x 7	8.25/20 (a) 9.00/20	6.00/20	2,800
3,600	36 x 8	9.75/20	7.00/20	3,800
4,500	38 x 9	10.50/20	7.50/20	4,200
			8.25/20	5,100
5,500	40 x 10	11.25/20	8.25/20	5,100
			9.00/20	6,500
3,200	38 x 7	9.00/24	6.50/20 (b)	3,300
0,		9.00/22		
4,000	40 x 8	9.75/24	7.50/24	4.800
.,		9.75/22	7.50/22	4,500
5,000	42 x 9	10.50/24	7.50/24	4,800
0,000		10.50/22	8.25/24	5,900
			8.25/22	5,600
6,000	44 x 10	11.25/24	8.25/24	5,900
0,000			9.00/22	7,000

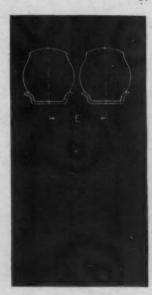
<sup>(</sup>a) 8.25/20 capacity 2,550 lb. 8.25/22 capacity 2,800 lb. 9.00/20 capacity 3,250 lb.

(b) Wheel change.

Single or dual balloon tire equivalent for carrying loads of high-pressure tires are listed opposite load capacity. Dual balloons are rated twice the capacity of single balloons.

Table 4—Dual Spacings Determine Oversizing Practicability

			7
		Tire May Be	Oversizing
Dual Spacing	Rim Size	Oversized	Not Permitted
71/4	5	***	5
73/4	5	5	6 (8-ply only)
71/4	5	5.50	6.00
73/4	5	6.00	6.50
9	- 6	6	
9	6	7.00	7.50
10	7	7	*** )
10	7	7.50	8.25
101/2	7	8.25	9.00
111/2	8	8	
111/2	8	9.00	9.75
12	8	9.75	10.50
123/4	9-10	9.00	10.00
123/4	9-10	***	10.50



with dual spacing of 7½ in. cannot be oversized, but with 7¾-in. dual spacing we can oversize with 8-ply 6-in. high-pressure tires. Dual spacing of 7¼ in. permits use of 5.50 balloon tires or 6.00 as oversize, and with 7¾-in. spacing, 6.00 or 6.50 balloons can be mounted.

Rim size is another factor to consider in oversizing tires. Carrying capacity of a tire is reduced if it is mounted on a rim which is too narrow to support it properly. Rated size of a rim can be determined easily by measuring width between flanges, as shown in Table 2.

No weak attack on high-pressure tires is being waged by balloons. Not only are more models in lower tonnage ratings being built with balloon tires as standard equipment, but balloons have been adopted in higher ratings, until now trucks ranging from 1000 lb. to more than 5 tons capacity are factory-equipped with balloons. A year ago a lone 1-ton model on balloons was listed in COMMER-CIAL CAR JOURNAL specification tables, but there were 14 models of 1-ton rating on balloons in the last issue. In the 11/2-ton group balloons were scheduled for front tires only of one model, now eight models have balloons on all four wheels.

Present-day balloons are carrying some man-size loads. Most of the low-pressure tires listed 12 months ago were 5.00 and 6.00 sizes, and the largest was a 7.50. Scan specifications of current models and you will find 9.75 and 10.50-in. balloons and plenty of 9.00 duals. Two 9.00/22 balloons will carry 7000 lb., and as there are four tires on a dual tire rear axle, the total carrying capacity of four rear tires of this size is 14,000 lb. or 7 tons. But the end is not yet in sight. Tire sizes of 11.25, 12.00, 12.75 and 13.50 in. have been approved by the Tire & Rim Association. A single 13.50/24 balloon

Tires listed in third column may be oversized with dual spacing shown. Tires in last column cannot be oversized. High-pressure sizes are given in whole numbers, as 5, balloons in whole numbers and two decimal places, as 6.00 in.

is rated at 9100 lb., two of them can roll along comfortably supporting 18,200 lb., or a bit more than 9 tons. Four of them on a tandem rear axle would rate a load of 18 tons. This weight, plus a few pounds bearing down on the front tires is rather more than most Legislatures are willing to have cavorting upon their highways, built from proceeds of long-term bond issues. At least one tire company is developing a single balloon to carry 14,000 lb., replacing two smaller balloons. As it would take two 12.75/20 balloons to carry this load, the 14,000-lb. tires will be something out of the ordinary in the field of air containers.

All of the balloon sizes mentioned are not yet in production, but it is quite evident that tire makers are ready to supply low-pressure tires for carrying any sort of load from a few dozen unfilled cream puffs to many cubic yards of wet cinders. Tires are not the only things to be considered in adopting large low-pressure equipment. Axles, brakes, frame height and other elements of chassis design must be worked out at the same time. They are being worked out rapidly to keep pace with acceptance of balloons by users.

Advantages of balloon tires for highway freight transportation may be summed up in the words, better service at less cost. This does not mean that there is no place for high-pressure tires or for solids. All sorts of tires are needed for trucks in different kinds of service under varying conditions. A truck running about a factory yard does not need the same type of tire as a high-speed intercity job.

Better service of balloons includes longer life under high speed, improved cushioning, greater traction and less punctures. Less cost results from greater mileage of balloons, which cost no more than, and in many cases less than, high-pressure tires of the same carrying capacity.

# ROADSIDE VENDORS BUY Trucks to Sell Truck

In This Generally Slighted Vocation Millions of Dollars Worth of Farm and Other Products Are Hauled by Truck to Rural Roadside Stands Each Year

By MARTIN J. KOITZSCH

HE city dweller by his frequent excursions into the farming regions, his travels between cities, his week-end tours and because of his fancy for freshgrown fruits and vegetables, has created a new and flourishing business and, indirectly, a new market for trucks. Roadside vendors constitute this market, which reaching its peak during the summer months should furnish the alert dealer and salesman with a profitable market for increasing new and used-truck sales in the slow, sweltering months of June and July.

Almost as ever-present as gasoline filling stations, summer roadside stands are spotted along thousands of miles of main highways courting the pocketbook, of millions of motorists with their appetizing messages to the palate. Surveys conducted by many state departments of agriculture indicate that business done by individual highway retailers ranges from a few hundred dollars to more than \$5000 each year and that the number of stands is increasing rapidly.

Every one of these vendors has a transportation problem, which may be large or small, according to individual setups. Before a vendor can sell his wares he must haul them to his stand and unless he has permanent quarters must haul them back again toward evening. If his business is large, stocks must be replenished frequently and drawn from various sources of supply, near and far. But whatever the size of his business the truck somewhere fits very definitely into his activities. Just how, is for the salesman to determine, which he can do with profit by spending a little time investigating.

Roadside stands are not a fad, rather

they are rapidly becoming a firmly entrenched institution, being fostered by farmers, independents and finally supported by the buying public. Farmers are enthusiastic about the proposition because it enables them to dispose of their farm products at a better profit than would be possible if they shipped them to the commission markets; independents are encouraged to engage in the business because they can buy cheaply from neighboring farms and sell with little handling expense, and the public buys because of freshness and relatively low prices compared with city rates.

The transportation problems of vendors, of course, vary. Operators of roadside stands come generally under three classifications, namely, farmers whose land adjoins a highway; farmers who rent a lot on the highway and trek in their supplies from the back-country and in some instances from city markets, and free-lance operators who rent or own plots of ground on the highway and buy from neighboring farmers and other markets. While all these different classes of operators are live truck prospects, the independent operator probably offers the truck salesman the greatest opportunities. The free-lance first

of all is an enterprising type, essentially a merchant and generally one who has had previous business experience. Noting the popular growth of roadside stands and sensing profit possibilities he steps into the activity on a larger scale and with better merchandising ideas than the average farmer. Being an independent he must, of course, buy his supplies, which he does from various sources, using the truck or several trucks to haul them to his stand.

Out in Arizona, A. P. Brown of Tucson operates all the year around, using three light trucks in his business. He buys fruit in large quantities at orchards near Phoenix, 137 miles distant, trucking his purchases to his stand twice a week. Mr. Brown operates two fruit stands in Tucson. Two of his trucks are fitted up as stands and the third is employed to keep them supplied. The stands are located on vacant lots at the intersections of prominent highways.

The trucks used for stands are fitted with two sets of wings which form two inverted V's, the apexes of which are supported by the express sides of the truck and the outside ends by orange crates. The outside wings are hinged so that they may be swung and closed at night.



Morning Stand-Dressing Activities Along the White Horse Pike, a Main New Jersey Highway Connecting Philadelphia and Atlantic City. Light Trucks Haul Supplies

### ROADSIDE VENDORS BUY TRUCKS TO SELL TRUCK



A. P. Brown, of Tucson, Ariz., uses three light trucks, first to haul his fruit 137 miles and then to merchandise it in a \$100 per day business

The trucks are backed up near the edge of the sidewalk and turned at such an angle that travelers can see the display from either side some distance away. Oranges and grapefruit are artistically arranged on the wings with green leaves mixed in between and the center of the truck is piled high with fruit. Carrying out the color and gigantic display appeal, Mr. Brown literally surrounds himself with mountains of fruit, piling up large quantities around the truck.

During good days, when sales average between \$75 and \$100, the supply truck is kept quite busy replenishing the stock and keeping the piles high. At the end of the day the sides of the trucks are closed, loose fruit is placed in the display trucks and crates in the spare truck and the little fleet drives home for the night to return the following day.

Vendors having stands on their own properties are of two types, those who besides purveying all of their own-grown products augment their supplies from other farmers and vary their lines with products not locally grown and obtained from city markets, and those who draw their supplies exclusively from the farm on which they are located. The first type would, of course, be lost without the truck, and is an excellent prospect for one or more trucks. The hauling problems of the second type are comparatively simple. But while these perhaps are the least likely prospects for new trucks, they afford an excellent outlet for used trucks. Their transportation needs may not be very great, but there are times when even they can conveniently employ a truck for

general utility service on their farms in conjunction with their roadside stands and a low-priced used truck for such low-mileage service will probably appeal to them as a good investment.

Farmers not so fortunate as to own a piece of property adjacent to a highway and who rent the ground on which they are established are also very good prospects for new truck equipment. Being situated some distance from their various sources of supply, they are wholly dependent on the truck.

Whether operated by farmers or tenants, the plan of roadside stand operation is fundamentally the same. Vendors' stands, however, vary in elaborateness. Some erect permanent buildings, which may be closed up over night: some construct open sheds of various shapes and designs, with or without closet facilities for storing small quantities of left-over produce until the next day, and others use their small trucks for stands. parking them alongside the highway and rigging them up for attractive display. There is still another group which operate on week-ends only, weather permitting. The stands of these generally consist of a few planks supported by a couple of trussels or boxes. Their displays are small and, of course, their business is conducted in a small way. But even these may have ambitions and eventually develop into flourishing all - week roadside stands. For that reason they are potential truck buyers, and the salesman contacting them early is on the ground floor for possible future sales.

The roadside stand season and its length depends upon the section of the country in which the vendor is located and the individual operator's setup. In the East, through New Jersey, eastern Pennsylvania, Delaware and Maryland, the season may extend from the middle of April up to November; in New York it extends generally from June

to October; in the Southwest the season extends throughout the year, starting with oranges and grapefruit in winter and ending with melons, cantaloupe, tomatoes and other fruits through the summer; stands in many Mid-Western States are also open throughout the year, many selling jams and jellies during the off periods as well as through the regular season.

Trucks ranging from onehalf to 1½ tons capacity, equipped with canopy-top express bodies, are mostly popular with roadside operators because of their flexible service. They are used for hauling produce to and from stands, can be quickly dressed up for use as display stands and serve for general hauling service on the farm.

M. Mazzeo, a farmer and proprietor of a roadside stand near Hammonton, N. J., believes that the roadside stand is "the best break the farmer ever got." "Before I went into business for myself, and the same applies to many of my neighbors, I had to depend on the commission merchants located 30 and 50 miles away to dispose of my stuff. Even if they were successful in selling our shipments it cost us plenty. When selling wholesale to the market we have the expense of crating, the costly and timeconsuming labor of hauling, and finally must pay the commission merchants to the tune of 10 per cent. If the stuff is sold under price, the commission merchant still gets his 10 per cent, but we lose; if it isn't sold, we stand the entire loss. Today we avoid both the expense and the vagaries of a fickle market by disposing of all of our products by retailing to the public at prices higher than we could get at the markets and still low enough to encourage passing motorists to stop and buy.

"My season starts about the middle of April with asparagus and rhubarb, which I supplement with spring TURN TO PAGE 54, PLEASE

ORN TO PAGE 54, PLEASE

## IS A HIGH GEAR LOW AND A LOW GEAR HIGH?



Axle Ratio Nomenclature

Many different terms used to show how a rear axle is geared are sorted into two groups. Some of the terms may be misunderstood, others are more definite. Choose with care.

4.00 to 1
high speed gear ratio
high speed ratio
low-gear ratio
high-gear ratio
low ratio
low reduction
geared up
high geared
high gears
fast axle
fast

10.3 to 1
low speed gear ratio
low speed ratio
high-gear ratio
low-gear ratio
high ratio
high reduction
geared down
low geared
low gears
slow axle
slow

It's Possible Because of Nomenclature Confusion, Which Can Be Avoided By One Simple Expression

F all topics which have arisen to confuse, confound and exasperate those who sell and those who use trucks, rear axle ratio is one of the worst. High gear ratio means an axle for high speed to one person and slow speed to another. When they attempt to reconcile statements, they find that both are correct, because meaning depends on whether high applies to gear or to ratio.

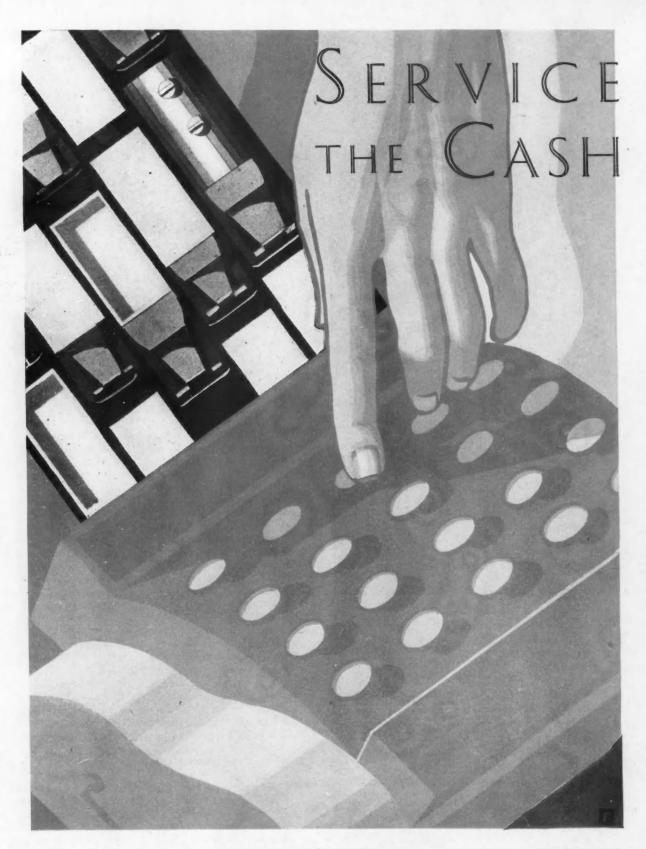
Meaning of various modifiers of the word ratio is no mere academic question. Lack of mutual understanding of terms may cost money and cause annoyance. A salesman who interprets a buyer's request for a "low reduction rear" to mean a fast axle may find that the owner wishes pulling power rather than speed. Cost of this mistake is a "change rear axle ratio N.C." job. Parts men and service managers also are liable to make costly errors. An owner who wishes a pair of gears for a slowspeed axle may mail an order for a "low ratio" ring gear and pinion. Wasted express charges may be least of troubles which ensue when wrong parts are shipped.

Many dealers and salesmen who would gladly undertake transportation surveys calling for costs in three decimal places avoid any reference to a 7.5 rear axle as being fast or slow, high or low. By sticking to figures of the ratio itself they get around the difficulties of expressing ratios simply and unmistakably.

Given four or five words, rear axle ratio can be expressed in a way which leaves little room for doubt or error. A high speed gear ratio is a ratio which gives high speed to the vehicle. Few misunderstand this term. But when it is abbreviated by leaving out a word or two, trouble starts.

Much of this confusion is due to the fact that there are two ways of reckoning axle ratio. Mathematically speaking, a ratio shows relation between numbers. In this sense, a 10 to 1 ratio is a higher ratio than a 5 to 1 because 10 is a higher number than five. The other way of expressing ratio is by "gear." High gear means high speed to an automobile or truck driver. Low gear denotes low speed. It was a familiar term in bicycle days, and meant high speed then.

Double meaning of high gear ratio is due to misunderstanding between parties Turn to page 60, please



MAKE MONEY FROM MAINTENANCE

# ALL MAKES AND TILL'LL TINKLE

If you've a nose for one-make service specialization that spites your profit face, cut it off, argues "Mack" of Miami, who says any trained mechanic can turn out a good job on any make of truck.

J. D. McGRADY
Prop., Mack's Garage
Miami Florida
Words by Joseph Faus

MUSIC

J. D. McGRADY says he doesn't care if Georgie Cohan writes the songs of the country and if Hoover's crime commission rights the wrongs of the country, as long as he can repair the trucks of the country with a few from the city thrown in, or towed in, for that's his business and he doesn't mean maybe, perhaps or if—he means absodamlutely.

The above vowels, consonants and quaint Eskimo expressions were uttered by Mr. McGrady at 211 N. E. Twentysecond St., Miami, Florida. This address gives sesame to 15,000 sq. ft. of floor that, with walls and roof, makes a shop called Mack's Garage, well known to and held in high esteem by many owners of pleasure and commercial cars in the Magic City and vicinity. It is also well known to and held in high esteem by Mack himself, and small wonder, for his energetic crusade against carbonized valves, misaligned wheels and customers who won't pay cash, brings him vitamins a-plenty and also plus. After some tactful persuasion, for the benefit of the recorder, Mr. McGrady proceeded to exercise, modestly, his larynx in this wise:

"Please don't get the idea my shop is omnipotent in repair service and has some startling innovations that can help other similar enterprises in the automotive field. The best doctrine is the doctrine of good example, wherefore myself and employees work long and hard and can only politely say to the counsel-seeker, 'Go thou and do likewise.'

"HOWEVER, in regards to this truck business I've got something besides a mustard plaster on my chest I'd like to get off, and here it is: You take most of the men engaged in the truck repair service and they are sticklers for system and specialized service. They will advertise they have Mack master mechanics for Mack trucks and Dodge master mechanics for Dodge trucks, and so forth and so on. The indisposed Macks and the sick Dodges wheeze in for rejuvenation and their master mechanics accomplish wisely and well the rejuvenescence, but there will come a day when the master mechanic of, say, the G. M. C. truck hasn't a G. M. C. truck handy on which to exercise his knowledge and pliers, and perforce he puts in some idle time, or some time a close cousin to idle. In fact, during the average month in the average shop in the average city there will come a number of such days, and when the books are finally balanced the boss' temper gets a bit unbalanced, and he says he will be darned and doggoned if he can see why his profits are so goshawful

"Now, I am an apostle of the worker who can adapt himself to any given task; I believe there are very few mechanics who can't repair a Dodge truck as well as a Ford truck, or a White truck as well as a Chevrolet truck, and

TURN TO PAGE 60, PLEASE

# S.A.E. AMPLIFIES NEW



there be a person who still believes that the Diesel engine as applied to the motor vehicle is being embraced only as the popular idol of the moment and that the status of the gasoline engine is a thoroughly established and an unassailable entity, that person unless he snaps into an "about-face," and that quickly, is headed for a nasty fall and decorative dabs of mercurochrome. Such a person attending the Summer Meeting of the Society of Automotive Engineers at French Lick Springs, Indiana, would have learned, without the need of sniff-

ing the breeze or slapping the well-known ear to the ground, while strolling the lawn, lounging in the lobby, strutting the ball-room or listening in at the sessions, that this and that company was conducting Diesel researches and tests and that others including one of the largest truck producers were actually contemplating the introduction of Diesel-engined chassis in the very near future.

During the sessions decided Diesel thought manifested itself in the papers of C. L. Cummins and H. D. Hill, Mr. Cummins,

# TRUCK DEVELOPMENTS



president of the Cummins Engine Co., who recently equipped a seven-passenger sedan with a Diesel engine of his design and drove it 6000 miles under every traffic, temperature and grade condition at speeds up to 70 miles per hour and with fuel consumption of from 25 to 35 miles per gallon, declared that his company was at present designing an engine that would have controlling di-

mensions comparable to present-day standard gasoline engines in truck service and would incorporate the same economy features and ability to start at low temperatures and take load instantly. He also gave examples of the performance of the Cummins engine, described its construction and low-pressure fuel metering and multiplunger injection principle. Greater details on how the fuel is carried in the injecting nozzle of each cylinder for two revolutions before being injected into the combustion chamber were given in the article which appeared in the May issue of COMMERCIAL CAR JOURNAL, page 25.

If you are of the opinion that the designing of a Diesel engine for automotive service is not beset with obstacles and that it is merely a case of applying the principles employed in the successful large stationary types to smaller bore engines you would have been quickly enlightened to the contrary by H. D. Hill of the Hill Diesel Engine Co., who drew attention to the different methods of procedure necessary in developing small high-speed engines from that followed in large slow-speed Diesels, and pointed out the host of difficulties with which the engineer is confronted such as wider ratio of heat radiating surface to cubic volume, smaller combustion space with increasing difficulty in keeping fuel of cooled surfaces, and necessity for greater accuracy in metering the fuel in minute

Voices Sounding the Coming of Truck Diesels, the Use of Electric Brakes, Changed Axle Design Wrought by Low-Pressures and Engine and Transmission Improvements Boom in the Ears of Industry's Many Representatives

charges. For the purpose of discussion he divided the present-day small Diesel engines into two general classes, namely, those in which the fuel is sprayed directly into the cylinder and those in which the fuel is first sprayed into an antechamber.

There's nothing like a play on the overworked pocket - book when courting public acceptance of an idea or product, and this was the philosophical

appeal Alex Taub of Chevrolet Motor Co. incorporated in his discussion of "Power-plant Economics."

Setting up the comparatively slow-speed engine of maximum piston displacement and the small high-power engine operating at high speeds as controversial economic fundamentals, Mr. Taub intrigued his colleagues with the poser, "Which of these two types give the greatest result to the operator per dollar of vehicle cost?" Using a large array of charts and arguments based on data, he proceeded to prove that piston displacement gave the public the greatest run for its money, not only in the low-price class, but every class. He considered and contrasted adverse effects resulting from an endeavor to increase horsepower per dollar by higher engine speed with effects obtained by a program of seeking maximum piston displacement per dollar and longer life.

L. R. Buckendale, executive engineer of the Timken-Detroit Axle Co., left no doubt in his hearers' minds as to the stellar role played by the tire of today as contrasted with its supernumerary part of a few years ago. Tracing the development of the tire from the steel-tired buggy days down to the present time of low-pressures, briefly touching on the problems introduced and overcome through the advent of cushions, high pressures and duals, by the demand

TURN TO PAGE 54, PLEASE

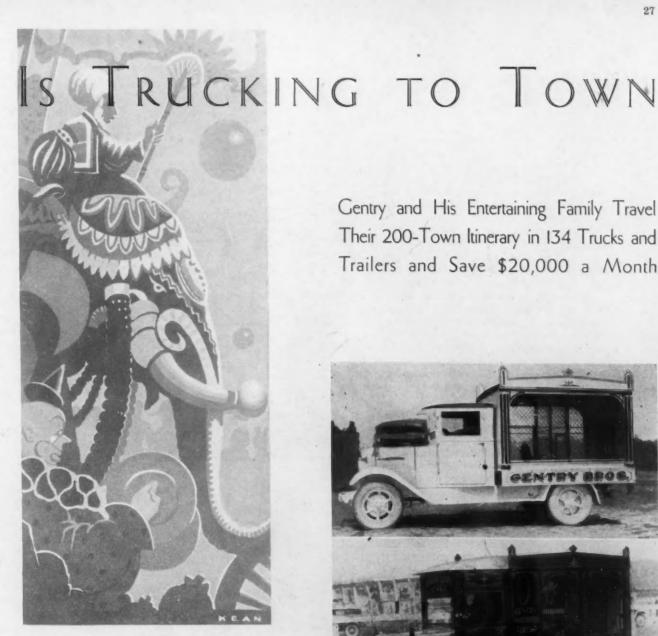
# HONK-HONK! THE CIRCUS



ND now, lay-uh-dies and gen-tle-men, in this ring we present for your approval the latest advance made by the motor truck—that indispensable factor in the life and welfare of our citizens. Today we offer the truck in a new role—as the coming transportation factor in the field of outdoor amusement and entertainment. We take great pride, lay-uh-dies and gen-tle-men, in introducing the first completely motorized large circus in the world."

If a frock-coated, high-booted, highhatted announcer were to bark that announcement at an audience, the visual answer to it would be a circus train of 134 trucks and trailers and 40 sedans. And if the applause called for any bowing, the bows would be taken first by the Gentry Bros., who own the first completely motorized circus, and then by the Kentucky Wagon Mfg. Co., Louisville, which is responsible for the special truck equipment, and the General Motors Truck Co., which sold Gentry the trucks.

Of course, the field of outdoor entertainment has not until now completely overlooked the motor truck. Carnivals and other small amusement units have been scooting about the country in trucks for some time. And even the larger circuses have found uses for a limited number of trucks. But now for the first time a large circus—with clowns and elephants and performing animals and trapeze artists and menagerie and everything-has entirely divorced itself from the draughthorse and the railroad and placed its sole reliance for efficient and economical transportation upon the motor truck. Gentry Bros. circus has gone the limit, has motorized itself entirely from cook-house to sleeping quarters,

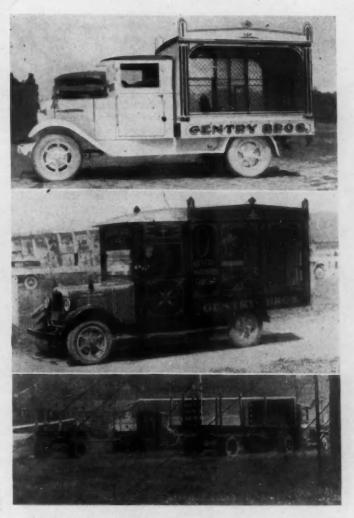


Gentry and His Entertaining Family Travel Their 200-Town Itinerary in 134 Trucks and Trailers and Save \$20,000 a Month

and placed complete dependence upon the motor truck to get it to every town on the itinerary on schedule so that every performance may go on-rain or shine.

The facts which unquestionably governed Gentry's conversion to trucks were the flexibility, labor-saving and short-haul moneysaving features inherent in every truck. These, it has been expertly computed, will make it possible for the circus to operate for \$20,000 less each month it is on the road. Figured on the basis of a seven-month season, this means a cool saving of \$140,000 annually. The chief economy made possible by the truck is the elimination of transfer work between the railroad siding and the circus grounds, and consequent elimination of draft horses, feed and attendants.

In this largest motor circus, body equipment, for the most part, parallels in appearance that which horses used to pull around.



The cage bodies pictured above follow customary circus practice, being equipped with clean-out pans, and hinged side aprons for the protection of spectators. The trailers are several of those used in hauling tent poles and lumber

# HONK-HONK! THE CIRCUS

Animal cages have undergone no metamorphosis in the transposition from iron-tired wagon to balloon-tired chassis. Neither have the bodies which cart the canvas, poles, rigging, collapsible seats and all other pieces of circus equipment. Construction, however, is better in that it conforms to the high standards of truck body building practice.

But the motorized circus does have body equipment which is the invention of necessity. The most novel is the bungalow type of body for the housing of star performers. There are 16 such bodies in the Gentry train. Moving down a road they look like a village on wheels. The external architecture of each bungalow body is different—the difference being solely in roof design. The interiors are alike and contain sleeping car accommodations with all necessary comforts and conveniences.

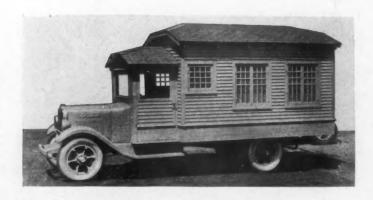
Special sleeping vans have also been designed to transport the bandmen and staff extras from town to town, and special bunk bodies resound to the snoring of the roust-abouts. And whereas formerly performing horses were transported around in box cars, now they move about in the luxury of special van bodies mounted on trailers. Elephants are similarly accommodated, but with less luxury.

A refrigerator body for provisions, and a metal-covered, insulated cookhouse body, are the most modern acquisitions of the commissary division. In addition, two chassis are equipped with portable electric light plants which furnish illumination for the entire circus, and several trucks are equipped with winches for the purpose of saving labor in the erection and tearing down of tents. Another chassis carries repair shop equipment. Bringing up the rear of the circus train, it is prepared to go to the assistance of any truck that encounters trouble and falls out of line.

The advance staff, which goes ahead of the circus proper and prepares the way with publicity, advertising, billboard displays and arrangements for food and fuel, is a unit consisting of nine trucks, one a panel body with special inside office features.

The time, labor and, therefore, moneysaving features which go with trucks are well illustrated by contrasting the trans-Turn to page 60, please

The cottage-type bodies have sleeping-car accommodations for star performers. The circus has 16 such bodies, the roof design of each being different. The platform stage used for parading is indicative of the dual purposes truck bodies can serve. This is also true of the bandwagon, which is used for hauling seats









The Commercial Car Journal and Operation & Maintenance

## VOCATIONAL ANALYSIS OF TRUCK OPERATING COSTS

Compiled From Figures Submitted by 5584 Business Firms Representing 46,017 Trucks of Varied Makes

OMPARISONS are odious and averages mean nothing. That's been the reaction of the average (sic) fleet operator when confronted with truck operating cost figures not of his own making.

The reaction is understandable. He has no way of telling what factors were considered in arriving at the total permile operating cost. Without this knowledge he has no way of proving to himself that his per-mile cost is satisfactory or unsatisfactory.

The General Motors Truck Co. evidently recognized this fully when it

approached the task of compiling operating costs, which resulted in figures being recived from 5584 business firms representing 46,017 trucks. Its analysis includes such important but seldom-given information as average payload, average length of haul of route and average number of stops per day. And even more important, its analysis is broken down into vocations.

Without further comment operators and the trade are referred to the analysis below, which they may approach with confidence that it will be more interesting than any previous one.

		OF	VEHIC CAPACI	LES	ВО	DIES U	SED					OPER	ATING	EXPE	RIENCE							
TYPE OF BUSINESS (Vocation)	of Firms	te 11/2 Tema	1½ to 3	3 Tons Up	Using Spe- Bedies	Using Stand- Bedies	Using both I and Stand- edies		age Miles allen ef G		Ave	rage Payl	load		age Lengt			ige Numi		Per Mai	Operating Mile Incl ntenance opreciation	and
	mber .	Light, 35 t	edium, Tons	6	Sial B	ord Be	Special Seard Be	Light Duty	Medium Duty	Heavy Duty	Light Duty	Medium Duty	Heavy Duty	Light Duty	Medium Duty	Heavy Duty	Light Duty	Medium Duty	Heavy Duty	Light Duty	Medium Duty	Heav
	ž	2	M	H	%	%	%	Miles	Miles	Miles	Lbs.	Lbs.	Lbs.	Miles	Miles	Miles	Stops	Steps	Stops	Cents	Cents	Cent
Auto Supplies and Accessories. Sakeries. Sottlers Uniding Material and Supplies. Department Stores. Oal, Coke and Ice. Oal and Fuel Exclusively Confectioners.	177 121 97 295 132 101 146 34	381 2,755 460 644 744 597 379 99	163 365 798 809 275 364 320 26	27 113 84 617 28 114 152 0	28 38 71 52 48 66 68 41	57 49 19 41 41 22 26 47	15 13 10 7 11 12 6 12	13.1 12.9 13.4 12.1 12.3 12.9 11.8 13.2	9.5 9.8 9.8 9.7 9.9 9.7 8.6	6.1 5.5 6.6 5.0 4.7 4.7 4.9	2004 . 1215 . 1459 . 2894 . 1848 . 3006 . 3323 . 1482 .	4924. 2981. 4741. 6160. 4902. 4574. 5470. 3417.	11091 9500 9583 12712 12857 9500 10069	33.7 60.5 40.0 11.6 40.4 19.7 5.1 57.4	71.0 123.9 56.3 17.1 45.5 25.9 15.2 72.6	53.6 52. 57.5 11.8 44.9 45.4 9.2	22.6 93.2 49.4 21.0 81.6 85.2 25.0 39.3	14.3 54.9 45.6 17.3 29.6 83.2 24.1 43.3	12.8 8.0 52.3 12.8 12.3 17.4 16.9	15.2 7.9 7.8 16.0 12.1 11.2 18.7 9.4	18.8 13.4 11.9 20.7 15.9 17.2 24.7 18.1	51.7 40.6 29.2 31.5 22.8 42.8
reameries, Dairies and Ice Cream Mfrs.	184	1,259	514	74	- 46	44	10	12.3	9.4	6.0	2202	5222	10742	42.0	59.4	65.2	129.0	63.3	35.9	10.3	13.9	18.
Drugs, Chemicals and Drug Sundries. Electrical Contractors.	23 81	161 136	46 36	9	48 32	43 62	9 6	13.0 14.6	7.4 11.4	5.5	1687. 1055.	4500. 3187.	11750 .	41.2 14.7	22.4 25.7	15.0	30.5 19.3	25.7 22.9	4.0	33.4 9.2	39.6 10.5	56.
Flour and Feed Mills and Grain Elevators. Florists.	94 - 59	124 142	118 15	16	50 19	48 78	2.3	13.2	11.4 12.3	6.0	3207 . 1032 .	5330 . 2860 .	8800.	18.5 17.2	36.5 31.2	8.2 33.0	29.3 32.0	18.9 18.2	11.5	9.9	11.6 15.2	
furniture and House Furnish- ings. Jeneral Merchandise.	179 219	509 656	184 105	16 7	73 36	19 59	8 5	13.2 14.0	10.5	6.7	1584 1946.	3573 . 4462 .	8000. 8571.	27.6 26.8	82.3 46.3	120.0 39.7	24.7 48.7	18.4 24.7	6.7	10.9	17.0 13.5	27. 28.
Proceries and Other Food Products Lardware Lay, Grain and Feed Lumber, Logging and Mill Work Machinery and Tools	341 100 48 317 62	2,554 200 142 598 93	683 56 70 525 71	303 12 8 141 25	39 36 46 74 40	54 60 50 21 53	17 4 4 5 7	13.0 14.1 13.8 12.5 13.4	10.6 11.2 9.5 9.4 9.9	6.9 5.0 6.7 5.9 5.4	1836 1512 2707 2645 1358	5239. 3841. 6542. 5307. 4278.	10717. 6500. 16400. 9612. 12167.	21.9 12.0 21.2 11.5 23.2	45.2 18.0 29.9 16.8 32.7	37.9 15.0 46.4 30.8 33.5	56.9 27.1 19.5 19.6 20.1	29.9 17.8 10.5 14.9 15.7	11.9 12.5 5.7 8.2 10.5	9.5 10.9 8.8 15.0 14.7	16.8 13.5 14.7 20.6 24.5	
Meats and Other Packing House Products. Metals and Metal Products. Dils and Gasoline. Plumbing and Heating. Produce and Com. Merchants. Publishers General Contractors. Road Contractors. General Trucking. Laundries and Cleaners. Warehouses. Municipal, County and State.	74 107 322 87 120 59 165 83 339 131 87 57	1,099 150 1,532 232 346 724 475 490 993 2,836 248 433	921 101 1,940 80 297 123 317 946 1,007 F6 353 366	224 80 291 27 16 8 201 665 534 1 143 415	51 33 71 40 55 25 49 42 61 30 67	38 54 21 56 38 61 43 49 31 62 22 49	11 3 8 4 7 18 8 9 8 8	12.7 12.4 13.5 15.1 14.3 13.5 13.1 11.9 12.7 13.6 12.0 12.0	9 9	4.8 4.9 6.7 3.7 8.0 4.7 6.8 5.8 5.7	2053 2538 5311 1313 1025 2844	4058 5162 4459 3641 5468 3437 6528 7068 6935 1691 5802 5662	10000 9618 8892 7500 11000 18000 10583 10955 14442 11976 9429	34.3 33.2 23.5 12.6 78.7 63.2 14.3 9.4 44.0 47.8 57.5 26.1	56.3 40.2 25.7 26.4 122.4 27.9 16.7 17.5 63.4 62.4 86.7 36.5	43.5 16.6 49.8 30.0 121.8 15.5 17.6 11.2 74.4 91.7 18.6	49.4 22.5 15.4 30.0 27.7 67.9 21.2 34.3 34.0 90.4 35.1 26.6	39.1 17.3 13.5 18.1 26.1 51.0 21.1 38.2 19.0 78.6 22.1	29.7 32.4 22.0	9.0 15.2 9.2 13.3 11.1 10.3 10.9 9.6 13.2 7.8 15.6 8.9	12.0 30.2 12.5 17.7 13.3 20.9 18.4 16.3 17.1 1.3 2.19.5	55 37 18 23 28
Gas, Electrie and Water Utilities Unclassified. Miscellaneous Industries.	130 339 432	2,163 585	1,281 354 518	231 127 61	39 52	34 44 48	27 4 6	12.9 12.4 13.6	83	4 5 4.9	1590.	3897. 4503. 4856.	10938 11030 11625	27.1 20.3 30.4	21 4 24 1 38 9	28.2 22.2	36.5 23.4 30.4	23.0 14.6 26.6	20.8	8.9 14.1 11.6	17.4 20.4 16.3	23.

<sup>•</sup> Total number of vehicles represented in this analysis: 46,017. Light-duty, 26,656; medium-duty, 14,504; heavy-duty, 4857.

# PRECISION FACTS.

Factory Recommends Clearances and Adjustments for Pontiac and Buick Engines, Bendix Brakes and Other Truck Chassis Units to Promote Efficient Repair Work

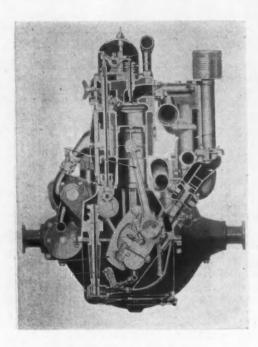
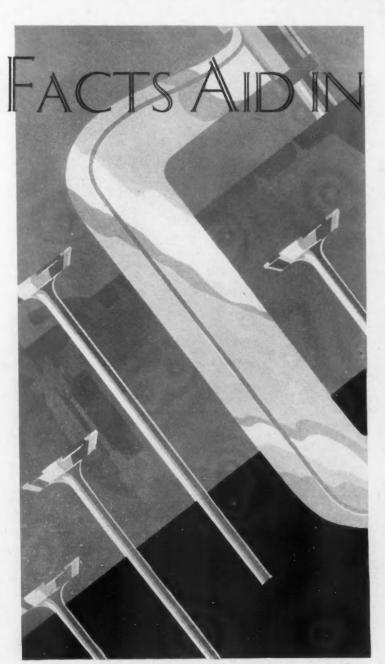


Fig. I—A torsion balancer is attached between crank throws of cylinders I and 2 on Buick engines. No repairs should be attempted by service shops. In case of trouble return it to factory for adjustment and repairs

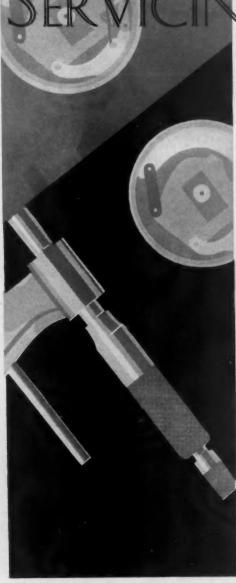


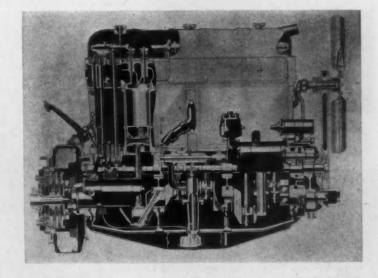
ENERAL MOTORS truck line for 1930 embodies changes in construction from preceding models which call for some change in maintenance procedure. Brakes, except on Model T-11, are two-shoe Bendix with cable control on front wheels. The larger sizes of rear brakes are equipped with eccentric adjustment of brake anchor pins, which differ from the type with which passenger car maintenance men are familiar.

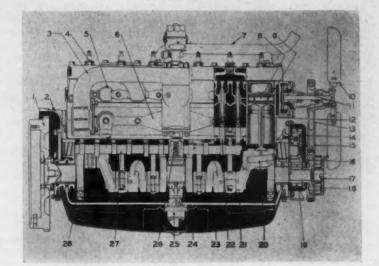
Although Pontiac and two sizes of Buick engines are used, as before, differences in detail of design make necessary some alterations in factory recommendations for clearances and adjustments. The accompanying table gives not only standard clearances and adjustments but, in many instances, limit of wear or out-of-round condition which may be allowed before repairs should be undertaken.

The Pontiac engine, of L-head type, which has cylinders 3 5/16 x 3% in., powers Models T-11, T-15, T-17

# SERVICING G.M.T. LINE







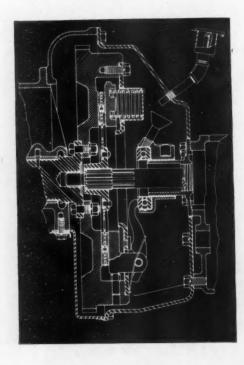
and T-19. The smaller Buick engine, 3  $7/16 \times 4\%$  in., is used in Models T-25, T-30, T-42 and T-44. A  $3\% \times 5$  in. Buick engine drives Models T-60, T-82 and T-90

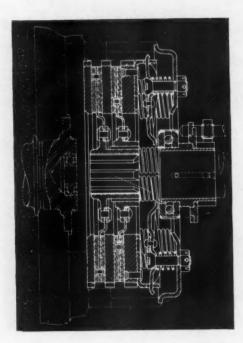
Pontiac Engine

Non-adjustable main and connecting rod bearings are used in the Pontiac engine. They are replaced when wear occurs and bearing caps should never be filed.

Piston pin bosses are line reamed to a light press fit at 70 deg. room temperature. After reaming pin bosses to size the pin can be wrung through one boss by a twisting motion and about 200 lb. pressure is required to force the pin through both bosses. Piston pins are retained by aluminum plugs pressed into each end of each pin; as the engine warms up, the

Fig. 2—The large Buick engine, at top, is similar to the smaller Buick engine, but ignition distributors differ in type and in timing, as explained on page 33. Fig. 3 (Above)—Pontiac engine shown partly cut away. Oil pressure regulator is on left side of engine. Turning pressure regulating screw, covered by a cap, clockwise increases pressure





# Fig. 4—A single-plate clutch as shown at top is embodied in Models T-11, T-15, T-17 and T-19. Fig. 5 (Above)—A double-disk clutch is employed in Models T-25, T-30, T-42, T-44, T-60, T-82 and T-90. Neither type of clutch requires adjustment for wear on facings. There should be ½ in. clearance between pedal and floorboard, and wing nut should be adjusted so that clutch is fully released just before clutch pedal reaches floorboard

#### ENGINE REPAIR STANDARDS

CYLINDER SIZES6-3 5/16 x 3% 6-3 7/16 x 4% 6-3 MAIN BEARINGS—No 3 4 4 4 4 4 4 5 5 5 5 5 5 5 5 5 5 5 5 5	uick 3¾ x 5 0150025 nims
MAIN BEARINGS—No 3         4         4           Diametral clearance	0150025
Diametral clearance	015-:0025
Diametral clearance	
TypeNon-adjustable shims shearing controls end play of crankshaftCenter 3rd 31 End clearance this bearing .003007 .005020 .0 End clearance other bear-	nims
Bearing controls end play of crankshaft	
of crankshaft Center 3rd 3rd End clearance this bearing	
End clearance this bearing003007 .005020 .0	rd
End clearance other bear-	07012
	/32
with a state of the state of th	003
Dodings the William IIIIII	
CONNECTING ROD BEAR- INGS	
Diametral clearance00150025 .00150025	00150025
Type	hims
Crankpin true within002 .003	003
Bearing shellintegral integral in	ntegral
DISTONS	
PISTONS Material	Cast-iron
	od
THE TOOMS IN THE PROPERTY AND ASSESSMENT OF THE PERSON OF	0015
	oose on .002
and the same of th	ight on .003
	004
	0010025
Ring Gap005015 .010015	010015
CYLINDERS	
Limit of taper or out of	
round	.002
VALVES	0015 0025
The state of the s	.00150035
	.00350055
Limit of clearance before replacement	.005
	3/32 1/8
	78 44 to 56 lb.
	valve closed
	.012014
at 175 deg.	at 175 deg.
	17 deg. 54 min.
U.D.C. U.D.C.	after U.D.C.
Exhaust valve closes U.D.C. 23 deg. after	20 deg. 4 min.
U.D.C.	after U.D.C.
Timing with clearance of010 .012	.012
IGNITION	
Distributor gap018020 .018020	.018020
Spark plug022025 .022025	.022025
Timingsee text see text	see text
	Bee text
CAMSHAFT	
Diametral clearance00150025 .00150025	.00150025
Limit of clearance002005 .003	.003
End clearance	.002005
Drivechain gear	gear
Backlash	.00050015
Limit of backlashchain drive .005	.005
OIL PRESSURE	
Minimum	20 lb.
Maximum	28-30 lb.
AdjustmentLeft side none	none

plugs expand the pins, holding them in position. Both plugs are punched at two points after piston is assembled on the rod to prevent the pin moving while engine is cold.

Front-end drive is by chain, with no coupling link, which is removed by taking camshaft sprocket off the camshaft. Both sprockets are stamped with "O" marks which should line up with each other when installed.

Ignition is timed by mark on flywheel which is 4 deg. ahead of upper dead center. Timing can be changed by moving distributor arm which registers with a scale. Timing is advanced by moving arm to rear of engine.

#### **Buick Engines**

Two Buick engines are, of course, similar in design and most of repair standards of one apply to the other. Both main bearings and connecting rods are adjustable by removing shims. Main bearing caps are

marked and marks should point to front of engine.

Piston pins are offset in pistons and offset is toward camshaft when pistons are in cylinders. Pins should be a snug wringing fit into piston bushing at room temperature of 70 deg. A spiral fluted reamer should be used for reaming and cuts of not more than .0005 in. taken at a time. When installing pins, do not touch surface with hands but dip them in light sewing machine oil with pliers. All six piston assemblies should weigh the same with ½ ounce.

Valve timing given is with valve tappet clearance listed. It will be noted that this timing clearance is not exactly the same as operating tappet clearance for valves.

Ignition timing of the two Buick engines differ. The smaller engine has a single contact distributor, the points of which should open to correspond with timing mark "ADV 15°" on flywheel.

A double contact distributor furnishes ignition for the larger Buick engine. With spark fully advanced, contacts open 17 deg. before top dead center. As each pair of contacts fires three cylinders, it is absolutely necessary that each pair of contacts be synchronized to fire at exactly the same relative position on the flywheel. If contacts are not timed properly three cylinders may be running with spark advanced too far while the other three are running with spark too late.

One pair of contacts is fixed in position and the other is adjustable. Ignition timing is determined by the stationary pair of contacts and the other set are then synchronized with the first pair. A synchronizing gage is available for checking contact timing. The job cannot be done by guesswork.

#### Three Brake Adjustments

Bendix two-shoe brakes are used on four wheels of all models. They are mechanically operated except on Model T-90, which incorporates Westinghouse air equipment on four rear wheels. Front and rear shoes of each brake are interchangeable.

Three adjustments are provided on brake shoes, an eccentric which centralizes the shoes, a notched wheel which spreads ends of pairs of shoes apart, thus reducing the clearance, and the anchor pins or pivots of the shoes. Two types of anchor pins are used, the bolted type and eccentric type. The latter type is incorporated in rear brakes of Models T-42, T-44, T-60 and T-82.

Brakes are adjusted at the shoes and not by lengthening or shortening control cables or rods. To make minor adjustment of front and rear brakes jack all four wheels off the ground and see that brakes are released. Loosen lock nut on adjustment 2, in Fig. 7. Turn eccentric same direction as wheel when truck is moving forward until very slight drag is felt when turning wheel by hand. Turn eccentric back until there is no drag, then tighten lock nut. Repeat this adjustment at other wheels.

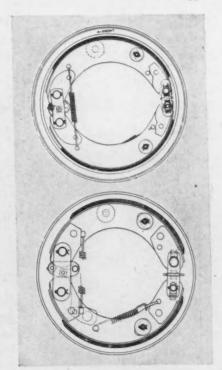
Remove cover plate 1 in Fig. 7 and turn notched wheel toward rim of backing plate until a slight drag is felt, then turn back until wheel turns freely. Repeat this adjustment at other wheels. Test these adjustments by depressing pedal about 3 in. with pedal depressor. If all wheels do not show the same drag loosen adjusting screw on tight brakes until all show same resistance to turning.

Major adustment to be made when fitting relined shoes or when other adjustments are not effective is made on anchor pins. Shoe clearance should be checked with feeler gage and should show about twice as much clearance at screw adjusting ends of shoes as at anchor ends. Clearances of .008 in. at anchor and .014 in. at opposite end of shoes are correct.

#### Anchor Pins of Two Types

To adjust anchor pins, bolted type, jack up all four wheels and loosen adjusting nuts 3 in Fig. 7. Remove cover plate and turn adjusting screw until two shoes are expanded so far that wheel can barely be turned with both hands. Tap anchor pins with a soft hammer on threaded ends to make some they move to correct position. Tighten anchor lock nuts with a 16-in, wrench, making sure they are tight. Loosen adjusting screw until brakes are just free again. Then make minor adustment as previously described.

Eccentric type anchor pins can be distinguished by an off-center slot in the end of the pin, as shown at 4 and 5, Fig. 7. To make major adjustment on these pins jack up an four wheels, as with other adjustments. Spread shoes by adjusting screw adjustment until there is a decided drag on wheel. Then with locknuts on anchor pins loose turn upper pin until decidedly more drag is felt. Hold anchor pin in this position and tighten locknut. Repeat on other anchor pin in the same fashion. Back off adjusting screw until wheel is free and then make minor adjustments of eccentric and check of braking effort of each rear wheel. Clearances specified will give the results outlined.



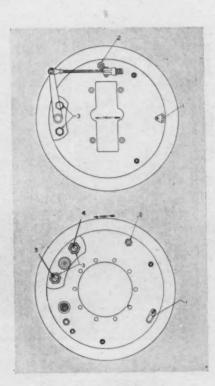
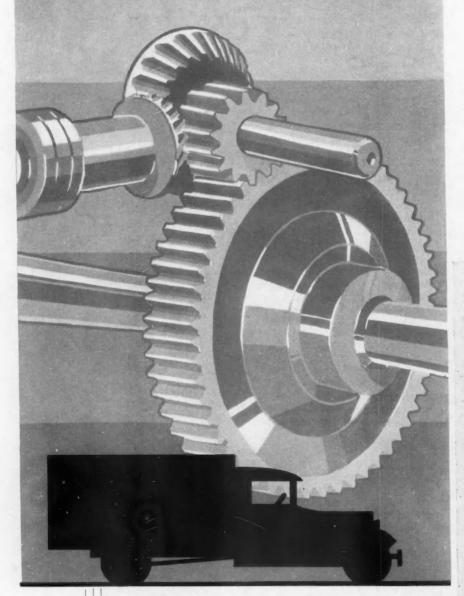
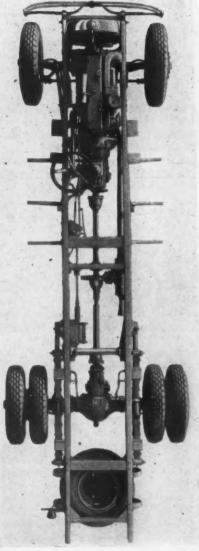


Fig. 6 (At Top)—Two-shoe Bendix brakes have self-energizing action in either direction. Fig. 7 (Above)—All brake adjustments are made from the outside, the eccentric which centralizes shoes is at 2, cover plate over notched wheel adjustment is at 1, in both views, anchor pins bolted type are indicated at 3, and eccentric type at 4 and 5, above

# DUAL REDUCTION AXLES



Plan view of new Brockway M o d e l 220. The pressedsteel 81/2 x 3 x 5/16-in. frame is reinforced by a tubular cross-member forward of the rear axle. An unusual feature of design is the mounting of the vacuum booster close to the rear axle. The disk brake is at center of propeller shaft



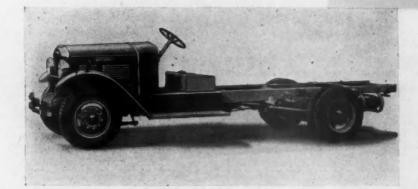
The Commercial Car Journal and Operation & Maintenance

# DRIVE NEW BROCKWAYS

New Series Consists of Four High-Speed Heavy Duty Sixes Rated from 14,000 to 22,000 lb.

#### Specifications of New Brockway-Indiana Units

Model140	170	195	220
Gross weight14,000 lb.	17,000 1ь.	19,500 lb.	22,000 lb.
Engine, size 6-4 x 41/4	6-41/4 × 43/4	6-41/4 x 43/4	6-4% x 4%
Transmission, speeds and mounting4-unit	4—unit	4—unit	4—unit
Rear axle, drivedouble reduction	double reduction	double reduction	double reduction
typefull-floating	full-floating	full-floating	full-floating
Service brake4-wheel hydraulic	4-wheel hydraulic	4-wheel hydraulic	4-wheel hydraulic
auxiliary operation.vacuum booster	vacuum booster	vacuum booster	vacuum booster
Hand brakeexternal	disk	disk	disk
For detailed specifications see to	ables starting	on page 65.	



Brockway Model 195 equipped with six-cylinder engine, fourspeed transmission and double-reduction rear axle is similar in design to the other three models of the new series

DDITION of four new models equipped with dual reduction rear axles rounds out and extends the Brockway-Indiana line of six-cylinder trucks from one to ten tons capacity. These new units carry model designations, which, by the addition of 00, indicate their gross weight rating, namely Model 140 carries a gross weight rating of 14,000 lb.; Model 170, 170,000 lb.; Model 195, 19,500 lb., and Model 220, 22,000 lb.

All four models are similar in general design, differing only in capacities of various components making up the complete chassis. Continental six-cylinder engines unit-mounted with multiple-disk Brown-Lipe clutches and Brown-Lipe four-speed transmissions and Wisconsin double-reduction rear axles are common to the new series.

A 72-hp. 4 x 4% in. 30B engine powers Model 140, while Models 170 and 195 are equipped with 4% x 4% in. 33B's, developing 88 hp., and Model 220 with a 100-hp. 4% x 4% in. 34B. Starting and lighting are furnished by Auto-Lite equipment and ignition by battery. Zenith carburetors and G. & O. radiators are also common to the line.

Final drive is through full-floating Wisconsin double-reduction rear axles, increasing, of course, in capacity with the chassis models. Drive is taken through radius rods. Four-wheel Lockheed hydraulic internal brakes, amplified by vacuum boosters, are employed on all four models, but hand brakes vary. A transmission location is employed on the two lighter models, external type on Model 140 and disk type on Model 170. Disks mounted at center of double propeller shafts are used on the other two models. Ross steering gears are used throughout.

Dimensions of the pressed-steel frames vary with the models as follows: Model 147, 7½ x 3 x 3¼ in.; Model 170, 8 x 3 x 3¼ in., and Models 195 and 220, 8½ x 3 x 5/16 in. Springs differ only in the number of leaves, the length and width of front springs and length and width of rears being the same throughout the line. All rear springs have helper springs.



#### HA! BUSINESS

IT'S beginning to look as if the truck industry would have to take seriously the wisecracks on stage and in newspapers about a so-called business depression here and abroad. During the first quarter, domestic truck business was just a whisker under that of last year, which, of course, proved that if there was a slump, it was keeping itself busy in another part of the American house. Things looked rosy-until along came April. April showers may make all things beautiful, but they washed out domestic truck sales with a 15 per cent drop from the 1929 figure.

This, of course, changed the complexion of the domestic sales situation from a rosy first quarter to a slightly sallow first four months, which showed a loss of 8 per cent in domestic sales. Of course there is considerable consolation in the fact that while sales were 8 per cent under the record 1929 (an abnormal year, as any professional optimist will tell you), they were still 70 per cent above 1928 (a normal year, as those same p.o.'s will assure you). Such a consoling com-

#### AFTER HOURS

parison may kid somebody some of the time, but it doesn't kid the manufacturers any of the time. The answer is that you can't progress backward.

And that is why the industry is fixing its eyes on the fat months of the fall season, when a revival of general business activity is widely predicted. The summer months will be rather lean unless the trade rolls up its sleeves and by dint of superhuman selling efforts knocks the well-known seasonal expectancy into a corner.

There is no likelihood that export sales will stage a comeback. In the first four months they were 33 per cent under 1929, which is a heart-breaking disappointment. And with the export market lacking an appetite, truck production naturally was off in the first four months—21.8 per cent, to be exact.

The intent of this honest discussion is not to furnish the trade with dark-colored spectacles. Too many of them are being worn already. Rather, its purpose is to focus attention on the need for exerting even more strenuous merchandising and salesmanship than marked the successful first quarter.

Some business philosopher in answer to the query, "How far can a dog run into the woods?" wisely declared that he can run into the woods only half way—after that he's running out. It's that way with the general slump in business. Business is looking up, and not, as Ed Wynn cracked, because it's flat on its back.

#### BREAKS

TWO months ago if you had asked us our opinion of senators we would have pulled you beyond earshot of the police and there whispered our robust impeachments. But hav-

ing seen how sensibly senators behaved when they got their hands on the Parker bill, regulating interstate bus operations, we bow in apology. Yes, sir, what they haven't done in the form of amendments to take the teeth out of the Parker bill and furnish it with ticklers wouldn't even make an average length conversation for Cal Coolidge. The bill in its amended form is so innocuous that the railroads and other large bus operators ought to lobby against its passage. It virtually gives them nothing they asked for and many things they didn't. Such bullet-riddling of a piece of automotive legislation makes us more hopeful in the event common carrier trucks are picked on next.

Up until the other day the following provision was a part of the Uniform Motor Vehicle Registration Act: "A non-resident owner of a foreign vehicle operated within this state for the transportation of persons or property for compensation or for the transportation of merchandise, either regularly according to a schedule or for a consecutive period exceeding thirty days, shall register such vehicle and pay the same fees therefor as is required with reference to like vehicles owned by residents of this state." This limitation of licensing reciprocity made it tough on buses and trucks, because duplicate taxation is just a repetition of something that's bad enough once. Therefore, when the National Conference on Street and Highway Safety voted in Washington the other day to strike out this provision it marked the removal of one of the chief restrictions to healthy and economical development of bus and motor freight transpor-

It's news when the automotive industry gets such breaks as the above two, and that's why we hastened to comment.—G. T. H.

# . . . it's wise to choose a SIX!





The Chevrolet Sedan Delivery combines unusual smartness and economy with remarkable six-cylinder performance . . .

The new Chevrolet Sedan Delivery, with its body by Fisher, is a decided favorite wherever the need is for smart, efficient, economical delivery equipment.

Its 50-horsepower six-cylinder valve-in-head engine gives you the modern performance so necessary in present-day traffic. It is remarkably smooth at every speed—saving both chassis and body from the destructive effects of vibration. It has a more flexible power flow—reducing gear-shifting to a minimum. And it maintains high speeds with greater ease. In fact, from every standpoint, its performance proves it's wise to choose a Six.

In addition, the Chevrolet Sedan Delivery offers such highly modern chassis features as completely enclosed, internal-expanding four-wheel brakes—four long semi-elliptic springs—four Lovejoy hydraulic shock absorbers—a big; rugged banjo-type rear axle—a ball bearing steering mechanism—and a heavy channel steel frame, with four rugged cross-members.

See this remarkable delivery unit at your Chevrolet dealer's today. Drive it. And, as you do so, remember that it is just as economical as any delivery unit you can buy. It costs no more for gas, oil, or upkeep. And Chevrolet's flat-rate service charges—including both parts and labor—are the lowest in the industry on many operations.

CHEVROLET MOTOR COMPANY, DETROIT, MICHIGAN Division of General Motors Corporation

The Sedan Delivery
\$ 595

(Spare tire and bumpers extra)

Light Delivery Chassis ... 365

Roadster \$440
(Pick-up box extra)

1½ Ton Util- \$520

1½ Ton Chas-\$625

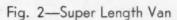
All prices f. o. b. factory
Fline, Michigan

# NEW BOD

# IES EXTEND



Insect life for four months out of the year has a pretty tough time of it in the parks of Milwaukee ever since the Forest Bureau of that city declared war against their voracious appetites by purchasing a Diamond T utility truck from John H. Ryan Motor Car Co. During four months of the year this twoton truck is employed in spraying, after which period the spraying equipment is removed and replaced with a dump body for utility work. The spraying equipment is made by Fitzhenry-Guptill Co., East Cambridge, Mass., and the tank carries 400 gal. To provide additional cooling circulation water is by-passed through a coil in the sprayer before it enters the radiator.



Hercules who thought he had a job cleaning out the Augean stables should have had the clean-up job on this 3-ton Model 605 Diamond T owned and used by Rex Cole for shipping electric refrigerators throughout its New England territory. The body is 21 ft. 8 in. long, 7 ft. 6 in. wide, 5 ft. 8 in. high and has tail-gate 36 in. high. In the 16-in. apron skirting the bottom of the job are three compartments for tools. The interior is plain.

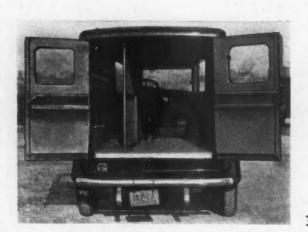
#### Figs. 3 & 3A—Special De Luxe Delivery

Up in Boston Jordan Marsh, which is another way of saying high quality merchandise, recognizing the value of outdoor advertising placed in service a new fleet of 1½-ton Autocars equipped with de luxe delivery bodies of trim and smart lines made by Fitz Gibbon & Crisp, Inc. The interiors of these jobs are novel. The backless helper seat gives access to the back of the car without getting out and opening the rear doors. A slatted partition, running the full length of the body 20 in. from the left side panel, forms a compartment for long bundles and for carying fur coats on hangers suspended from a rail fastened to the ceiling. The rear half of the partition slides on rollers in a rail on the floor with a guide at the top.

#### Fig. 4—Interchangeable Bodies

"Two in One" is not just a name to J. S. Ivins' Son, Inc., Phila. This well-known cookie baker carried this slogan out in fact when it recently placed into service a new 3-ton Dodge Brothers truck furnished with two bodies, one a spare for emergency service. The bodies, a freight and delivery type made by Wm. Wenkenbach & Co., Phila., are easily interchanged by removing 12 bolts, six per side, which fasten the body sills to the side rails, and sliding the body off and replacing the other in







June, 1930

# UTILITY OF TRUCK

a like manner. The illustration shows the freight body, which is more frequently used. It is 14 ft. long, 6 ft. wide and 6 ft. high. Side doors are hinged to the sides and made flush so as not to destroy the panel effect. The delivery body is lower and narrower, closely approaching cab dimensions, thus giving a sweeping effect.

#### Fig. 5—Passenger and Luggage

Little did the small band of Puritans that landed on the now famed Plymouth Rock dream that 300 years later weary wayfarers such as themselves would be met by a special vehicle to relieve them of their luggage and tote them to their destination. Dodge Brothers today offers such a vehicle for export. It is a 1½-ton 165-in. chassis on which is mounted a special type body for the transportation of passengers and baggage, known as a Pilgrim body. The entire body may be removed from the platform, standard stake sides substituted and the unit then used to haul freight. The accompanying illustration shows the passenger body with side entrances closed and baggage compartment on the roof.

#### Fig. 6—Overhead Platform

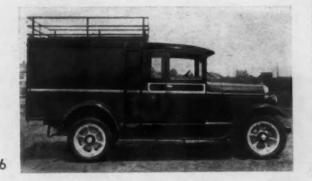
Return of "empties" need no longer be an onerous task for drivers or a costly replacement problem to operators. This extra service type of panel body offered by Dodge Brothers takes care of both angles at the same time. A slatted platform with side and end rails mounted on a reinforced top removes all excuses for the failure to return containers such as trays, baskets, bags, etc. The pretext of "no room" is out. A ladder is attached to the running-board just back of the driver's cab. This type of body equipment is designed particularly for laundries, bakeries, etc.

#### Fig. 7—Flower-Pot Body

Making flower-pots is one thing. Getting them to the consumer quickly and efficiently is another. The "nearby" market is a very important part of the total business of a flower-pot manufacturer. Shipments by rail to this market necessitates as much care in packing and handling as required by shipments to distant points. The W. H. Elverson Pottery Co., New Brighton, Pa., seeking means to reduce loss due to breakage and at the same time improve service to the "nearby" customer, decided to try a truck. The plan worked. An Autocar Ranger was purchased, equipped with a special platform type body, having four removable sections above a fulllength 8-in. board. Direct delivery of the Elverson product is now made to the trade within 250 miles with greatly reduced breakage and better delivery service.





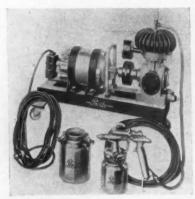




The Commercial Car Journal and Operation & Maintenance

June, 1930

## EQUIPMENT TO PROMOTE



#### Portable Sprayer

Presto Model 155 is the name of an electric portable spraying outfit offered by the Metal Specialties Mfg. Co., 338 N. Kedzie Ave., Chicago, for high speed application of lead paints and heavy liquids. A needle valve adjustment, controlled from the trigger, enables the operator to regulate the size of spray and amount of material applied or blow air entirely for dusting surfaces. Drive from motor to compressor is direct. This outfit equipped with interchangeable caps for round or fan spray, two air filters, three seamless containers, 25 ft. of electric cord and 25 ft. of air hose lists at \$142.50.



#### Lining Grinder

Standard replaceable grinding belts are used on the grinding wheel of the precision brake lining grinder, made by the Raybestos Division of Raybestos-Manhattan, Inc., Bridgeport, Conn. The roller guides are adjustable for any type of brake band or shoe and the tool is especially designed to surface molded or woven brake lining after it is riveted on the shoe or band. The price is \$45.



The R. M. Hollingshead Co., Camden, N. J., offers a device known as the Whiz gear flusher, designed to simplify the nasty job of flushing gearcases. A rotary pump and ¼ hp. motor are attached to the top of an 8 to 10-gal. container and the entire unit is mounted on a two-wheel hand truck. There is an injection hose equipped with a trigger controlled nozzle and a suction hose furnished



with a valve controlled nozzle. For flushing, filtered kerosene is drawn from the container and injected under high pressure into the gearcase to thin out the grease. The suction nozzle is then placed on bottom of gearcase and the mixture is pumped into the container. This operation is repeated. Ten gallons of kerosene will flush 30 gearsets.



#### Rees Jack

An adjustable base in this jack facilitates jacking, as one turn of the handle raises the jack to the load. It is designed for trucks up to three tons capacity. Its maximum height is 20% in. and minimum, 9% in. List price is \$13 and it is made by the Rees Mfg. Corp., Pittsburgh, Pa.



# EFFICIENCY IN SHOP

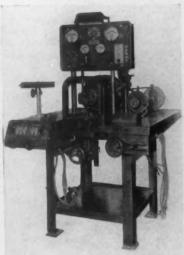
#### Test Stand

A stand for testing all units which make up the electrical system of a motor vehicle, known as the Allen E-89, is being marketed by the Allen Electric & Equipment Co., Kalamazoo, Mich. Power is provided by a 5-hp. motor having a speed range up to 3600 r.p.m. Straight line drive to the generator is accomplished by a twopiece universal coupling. Instruments include tachometer, ranging from 400 to 4000 in either direction; 5-in. voltmeter, graduated 0-20; 5-in. ammeter, graduated 40-0-80; 3-in. ammeter, graduated 0-6 for ignition testing and 0-600 for torque tests; 3-in. milliammeter, graduated 5-0-5 for testing output of coil secondary.



#### Truck Jack

Operated hydraulically, the Standard Super-Power Model 69 jack for truck service, offered by the National Standard Co., Niles, Mich., has a maximum lifting capacity of 15,000 lb. and elevating range of 101/4 in. Loads can be raised with either a long or short stroke of the handle. They are lowered by engaging a release lever on the handle and then raising the handle slightly. The jack is spotted by pressing down on the handle thereby raising large wheels. Wheelbase is 31 in.; width, 16 in.; length, 821/2 in., and height raise, 15% in.



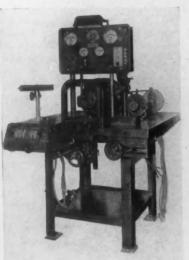
#### Carburetor Wrench

This handy miniature socket wrench for removing or inserting the auxiliary jet in Zenith carburetors used in Ford Model A trucks is being marketed by Stevens Walden, Inc., Worcester, Mass. Set of seven wrenches, ranging in size from 3/16 to 1/2 in., list

A torque test together with voltage and ampere draw gives a complete test on starting motors. A feature of the stand are quick comparison tests on coils, condensers and breakers. A separate vise and drive are provided for testing magnetos, breakers, condensers, coils and distributors. A rotary spark gap is supplied to synchronize two arm breakers, to test accuracy of cams, to check worn bearings of breakers of magnetos and battery ignition systems.

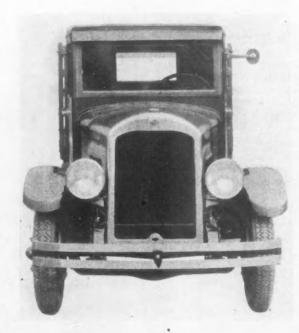


Seventy tools for work on ignition systems, generators, relays, starters, etc., as well as general automotive repair work, are included in the No. 70 RD Treasure Chest, sold by the Blackhawk Mfg. Co., Milwaukee, Wis. The tools consist of 3/16 to 1%-in. double hexagon and square sockets, special attachments and all necessary handles. The chest, made of heavy gage steel, is 23 in. long, 11 in. wide and 8% in. high.



The Commercial Car Journal and Operation & Maintenance

#### FISHER-STANDARD PUTS



Smart, Attractive Lines Feature New Models, Which Replace Former Units Except Merchants Express



Top: One of the three new 11/2-ton Fisher-Standard models. Radiators are deeper and cabs are more attractive than formerly. Cowls and curved spring horns have been adopted. Powered by four and six-cylinder engines, the gross weight ratings of these models range from 8,000 to 10,000 lb. and wheelbases from 144 to 162 in. Above: Cabs are interchangeable on the Fisher-Standard line. This view shows a stake body mounted on a 20 A-B 2-ton chassis

COMPLETE new line of trucks comprising fifteen models in various wheelbases and ranging from %-ton to 5-ton and over, all carrying the name "Fisher-Standard," is announced by the Standard Motor Truck Co., Detroit.

Along with the presentation of this new line, Standard also announces it now has available a dealer financing plan, including a 60-day floor plan.

Of the former models of trucks, only the merchant express series is retained. Outstanding features of the new line include more attractive lines throughout, deeper radiators, better-looking cabs, adoption of cowls, curve spring horns on the front ends of frame side-rails, etc. Gross rating in a modified form has been adopted for the new Fisher-Standard trucks, as indicated by the accompanying table. Bodies and cabs are supplied for the entire line, in fact the truck line has been designed for interchangeable mounting of one type of cab, although several variations of cab are available.

In the junior models of 6000 lb. gross rating, particularly the four-cylinder model, is seen a bid for the lower price delivery market. Panel bodies for this model are a distinct improvement in appearance over anything this company has offered heretofore. Wheel housings are small. Gas tanks are under the seat, but the raised floor permits the loading of such items as carpets, etc., requiring additional length to that provided by the body from the seat backwards.

The ¾, 1½ and 2-ton models are powered with either four or six-cylinder Continental engines. The remaining light models are offered with sixes only. From the ½-ton model upward, the new trucks are equipped with Continental valve-in-head R series truck engines. All models below 3½-ton are equipped with four-speed transmissions which are of Brown-

#### OUT 15-MODEL LINE

#### Specifications of New Fisher-Standard Models

Model	Jr. B (4)	Jr. B (6)	10A-B-C	15A-B-C	16-A - 17-A	20A-B & 23A-B	HD-6	Super-Six	100C-105C
Tonnage	¾ ton	34 ton '	1-ton	1½-ton	1½-ton	2-ton	21/2 - 3-ton	31/4 - 4-ton	5-ton
Gross Wt.	6000 lb.	6000 lb.	7500 lb.	8000-9000 lb.	10000 lb.	10500-11000lb.	16000-180001ь.	20000-220001ь.	25000-270001b.
Chassis Wt.	2650	2650	3400	3450-3600	3800-3900	3900-4150	6000-6400	6800-7500	9000-10000
Wheelbase	120	125	136-150	144-162	156	156-162	155	15614	200
Engine make	Con. W10	Con. 17E	Con. 17E	Con. 17E	Con.16C, S-4	Con.16C, S-4	Con.16R, 18R	Con. 18R, 21R	Con. 21R
size	4-3 1/4×41/4	6-3% x 4	6-31/4 x 4	6-3% x.4	6-3% x 4%	6-3% x 4%	6-4 x 41/6	6-4 x 41/2	6-4% x 4%
					4-41/4 x 41/2	4-414 x 41/2	6-4 x 41/2	6-4% x 4%	
Transmission									
make	Warner Gear	Brown-Lipe	Brown-Lipe	Brown-Lipe	Brown-Lipe	Brown-Lipe	Brown-Lipe	Brown-Lipe	Brown-Lipe
speeds and									
mounting	4-unit	4-unit	4-unit	'4-unit	A-unit	4-unit	4-amidships	7-amidships	7-amidships
Rear axle	Salisbury	Salisbury	Timken	Timken	Timken	Timken	Timken	Timken	Timken
drive	bevel	bevel	bevel	bevel	bevel	bevel & worm	bevel & worm	beyel & worm	worm
ratio	5.375	5.375	5.83	5.83	5.83	5.83 & 6.00	6.16 & 6.75	7.8 & 8.5	8.75
								1.1	-
								100	

For detailed specifications see table starting on page 65.

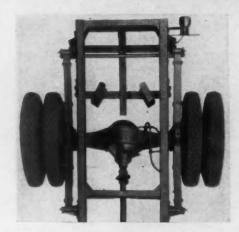


Lipe make, except in the Junior B four-cylinder model which is a Warner. The remaining models in the upper classification have seven-speed Brown-Lipe units, together with Brown-Lipe multiple disk clutches. This clutch is also used on the 2½-3 ton models. Single-plate Brown-Lipe units are employed on the smaller trucks. All models are available with power take-off if desired.

Unit mounting of powerplant is employed on all models up to and including the 2-ton, above which transmissions are mounted amidship. The Junior models are fitted with semi-floating bevel axles, whereas all others have full-floating Timkens. The 2½ to 4-ton models are available in either bevel or worm-drive types. The 5-ton model comes only with a worm-drive axle. Drive is Hotchkiss on the models ranging up to 5½-ton capacity. Above this radius rods are used.

Right, top: The biggest job in the Fisher line is the 105C, with a gross rating of 27,000 lb. It is shown here with a platform body and winch. Right: All models except the 5-tonner are equipped with Lockheed four-wheel hydraulic brakes, amplified on the 21/2 to 4-ton models with vacuum boosters. The 5-ton model is furnished with Westinghouse air brakes. Band-type hand brakes are provided on the smaller models and disk-type on the larger. The view is that of the 2-ton model with bevel drive





#### FLAT RATE PRICE LIST NO. 40

#### GENERAL MOTORS TRUCKS

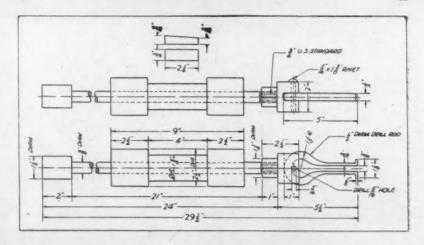
	Engine Combinations	F 4.	includes fitting and aligning all bearings. Does not include fit-		T-10, T-11, T-19 All other T models	1.50 1.00
E 1.	Remove and replace and re- grind all cylinder blocks, in-		ting pistons.		F 16. Body gears, renew.	
	cludes: Renew all pistons, pins and rings. Align rods. Ad-	ED E	T-20, T-21, T-30, T-40, T-50, T-42, T-60, T-80.	91.00	All T models	4.00
	just mains and refit rods. Overhaul tappets and rocker arms. Renew timing chain or gears. Renew valves and	F 5.	Inspect internal condition of engine. Includes: remove all heads, oil pan, rod assemblies Mike bores, pistons and crank- pins and ressemble.		T-10, T-11, T-19 All other T models	1.50 1.25
	guides. Clean carbon and grind valves. Clean oil lines. Over-		T-10, T-11, T-19 T-20, T-21, T-30, T-40, T-50, T-42, T-60, T-80.	10.15	Linkstonetten	
	haul oil pump, water pump and distributor. Renew high ten-		T-50, T-42, T-60, T-80.	11.15	Lubrication,	
	sion wiring. Clean and tune engine.	F 6.	Tune engine. Includes: clean		Miscellaneous	
	T-10, T-11, T-19 (without adjusting main bearings). \$98.0	10	and adjust breaker points and plugs. Clean fuel supply and		F 17. Oil lines, clean, when oil pan is off.	
	Other T models including adjusting main bearings. 98.0		carburetor screens. Retime and synchronize ignition. Ad- just carburetor and fan belt.		T-10, T-11, T-19	\$1.50 1.80
E la	Camshaft bearings, renew all		Tappets now included.	2.00	F 17a. Clean crankshaft passages when	2100
Li Adi	or install oversize shaft with	F 7.	All T models Engine support bolts, tighten	3.00	connecting rods are out. All T models	5.40
	T-10, T-11, T-19		all.	1.25	F 18. Make oil test on bearings when	
	T-50, T-42, T-60, T-80 6.0	00	T-10, T-11, T-19 T-20. T-21, T-30, T-40, T-50, T-42, T-60, T-80.	2.00	oil pan is off All T models	2.00
E 2.	Hone or bore all cylinders without removing blocks, re-	F 8.	C'ean engine.		F 19. Oil pressure regulator, adjust.	.50
	new all pistons, pins and rings. Align rods. Adjust mains and		T-10, T-11, T-19 All other T models	1.80 2.25	T-10, T-11, T-19 T-20, T-21, T-30, T-40, T-50, T-42, T-60, T-80.	3.00
	refit rods. Repack water pump. Clean all oil lines. Grind and	F 9.	Check compression, tappets, ig- nition system, fuel system and		F 20. Oil filter, renew cartridge.	
	reface valves and seats. Tune		all timing to locate engine miss.	2.00	All T models	.75
	T-10, T-11, T-19 (main		AND I MODELO CONTINUEDO	2.00		
	included) 53.0 T-20, T-21, T-30, T-40, T-50, T-42, T-60, T-80. 63.0	00			Pins and Rings	
	T-50, T-42, T-60, T-80 63.0	00	Head and Oil Pan		G 1. Rings, renew all, align and adjust rods.	
E 3.	Renew pins and rings. Align	F 10	0. Head gasket, renew one.		T-20. T-21. T-30, T-40, T-50, T-42, T-60, T-80	\$15.60
	bearings Grind and reface		T-10, T-11, T-19 T-20, T-21, T-30, T-40, T-50, T-42, T-60, T-80	\$1.60	G 2. Rings, renew all when con-	
	valves and seats. Tune engine. T-10, T-11, T-19 (main bearing adjustment not	D 11		5.50	r-10, T-11, T-19	2.40
	inc.uded)	00 1	l. Head gaskets, renew all. T-10, T-11, T-19	2.70	All other T models	3.60
	T-50, T-42, T-60, T-80 36.	50 F 12	<ol><li>Broken cylinder head stud, re- new one when head is off.</li></ol>		G 3. Rings, renew all and align rods.  T-10, T-11, T-19	12.25
E 4.	Renew pins. Align and adjust rods. Grind and reface		All T models	1.00	T-20, T-21, T-30, T-40, T-50, T-42, T-60, T-80.	11.70
	valves and seats. Tune engine. T-10, T-11, T-19 27.		<ol> <li>Oil pan, remove, clean and replace.</li> </ol>		G 4. Standard pins and bushings,	11.70
	Valves and seats. Tune engine. T-10, T-11, T-19		T-10, T-11, T-19 T-20, T-21, T-30, T-40, T-50, T-42, T-60, T-80	2.50	renew all, align and adjust	
E 5.			4 Scrane carbon all cylinders	2.75	T-20, T-21, T-30, T-40, T-50, T-42, T-60, T-80.	15.60
	Renew rings. Align and adjust rods. Grind and reface valves and seats. Tune	1.1.	T-10, T-11, T-19 T-20, T-21, T-30, T-40, T-50, T-42, T-60, T-80.	3.90	G.5. Piston pins only, renew all and	
	entine.	00	T-50, T-42, T-60, T-80	6.70	T-10, T-11, T-19	15.25
	T-10, T-11, T-19 24. T-20, T-21, T-30, T-40, T-50, T-42, T-60, T-80 27.				align rods only. T-10, T-11, T-19 T-20, T-21, T-30, T-40, T-50, T-42, T-60, T-80.	11.70
			Oil Pump		G 6. Rings and pins, renew all and	
	Engine, Miscellaneous				align rods only. T-10, T-11, T-19 T-20, T-21, T-30, T-40,	17.65
		FI	<ol><li>Oil pump assembly, remove, inspect and replace.</li></ol>		T-50, T-42, T-60, T-80.	15.30
F 1.	Engine only. Remove and re- place. Includes removing and		T-10, T-11, T-19 T-20, T-21, T-30, T-40, T-50, T-42, T-60, T-80	\$4.00	G 7. Piston pin, renew one when	
	replacing transmission, but does not include transfer of		T-50, T-42, T-60, T-80	3.75	connecting rod is out. T-10, T-11, T-19 All other T models	1.10
	All T models \$15.	00 =			G 8. Piston pins, renew all, align	
F 2.			Note		mnd adjust rods. T-20. T-21. T-30, T-40, T-50, T-42, T-60, T-80.	
	T-20, T-21, T-30, T-40, T-50, T-42, T-60, T-80 16.	00 -				15.60
F 3.		whi	Prices in this table supplement ich appeared in the March issue.	When-	G 9. Piston pins, renew all, when rods are out.	E 40
r J.	fitting and aligning all bear- ings only when crankcase is in-	mo	r reference is made to T models dels are included: T-10, T-11,	T-19.	T-10, T-11, T-19 All other T models	5.40 3.60
	tegral with block.	and	20, T-21, T-30, T-40, T-50, T-42 T-80.	6, T-60	G 10. Rings and pins, renew all, align and adjust rods.	
	T-10, T-11, T-19 65. T-20, T-21, T-30, T-40, T-50, T-42, T-60, T-80 28.				T-20. T-21, T-30, T-40, T-50, T-42, T-60, T-80	19.20
	1-30, 1-46, 1-00, 1-00 60.				200, 200, 200, 200.	27100

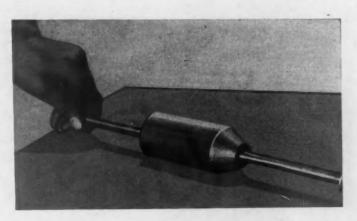


# SERVICE

From Shop and Factory

\$5 IDEAS FOR SERVICE HINTS FROM SHOP MEN ARE WELCOME. TELL ALL ABOUT THE IDEA IN SHOP TERMS AND SEND DRAWING OR PHOTOGRAPH. FIVE DOLLARS WILL BE PAID SUCCESSFUL CONTRIBUTORS





#### Two Bearing Knockers

HE idea of using a weight sliding on a bolt as a hammer to remove parts of engines appears in two bearing knockers submitted for this page. Although both use the same principle they differ in construction and application.

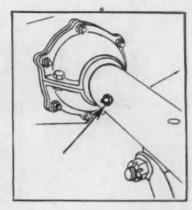
Removing clutch pilot bearings is the purpose of the knocker shown at top. The double hook which engages inner edge of the bearing is made of a piece of ½ in. drill rod bent to form a loop and turned at right angles at the ends. After insertion in the bearing the ends are spread apart by a wedge. Details are shown in the drawing.—V. Murray, Phila., Pa.

The knocker shown above is used to remove tight main bearing caps. The sliding weight is about 1½ by 4 in. Different sizes of threaded rod may be used to fit threaded holes in bearing caps.—Jos. C. Coyle, Englewood, Colo.

#### Ford Truck Joint

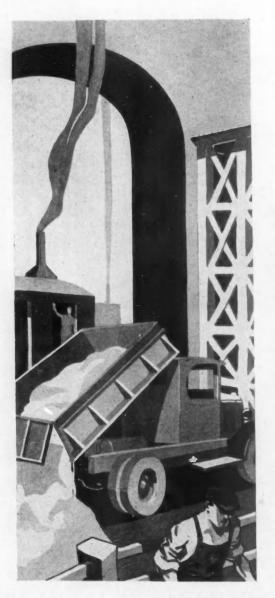
LUBRICATOR fitting is placed on the torque tube of the Ford AA truck just to the rear of the universal joint. This fitting is frequently overlooked when a truck is greased and oiled. This joint should be lubricated regularly every 500 miles.

When a universal joint is installed or replaced it should be packed with, grease. The quantity required is about 8 ounces, which is equal to five fillings of the grease gun supplied with the truck.



June, 1930

#### WOOD USES ROLLING WEDGE IN NEW HOIST



Seven Models, Ranging One Ton and Up in Capacity, Have Slanting Type Cylinders to Increase Lifting Power

By slanting cylinders upward slightly from front to rear in its new seven-model line of underbody F hoists the Wood Hydraulic Hoist & Body Co., Detroit, has built more lifting power in these models. The line provides a hoist for every chassis from 1 ton upward, each model being designated and classified as follows: F-IC, 1 to 2-ton; F-IX, 2 to 2½-ton; F-2C, 2 to 3-ton; F-3C, ½½ to 4-ton; F-4C, 3½ to 5½-ton; F-7C, heavyduty chassis, and F-8C, extra heavy-duty chassis.

Lift is accomplished by the rolling wedge principle. Outward force of the piston rod is transformed into greater lifting force by the action of rollers against lifting cams. There are two sets of rollers in the piston actuated cross-head; the outer set ride on the side rails of the sub-frame and the inner set contact the cams. The cams, mounted on

special seamless steel tubular cross-members, are attached to longitudinal body frame members by pressed steel brackets. The slightly tilted cylinder also increases lifting power because it permits the piston to get under the load more directly.

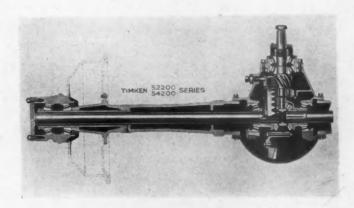
Power to operate the hoist is obtained from a power take-off, which is a part of the equipment. It is transmitted to a gear-type oil pump through a straight line drive. The pump draws from the low-pressure end of the cylinder. The cylinder is bracketed to two drop-forged steel drop-forged cross-members, front and rear.

Dumping is controlled by two levers located in the driver's cab; one engages the take-off and the other governs the pump. The hoist is raised, lowered or held in any position by these levers. The hoist stops automatically at fully raised or lowered position.

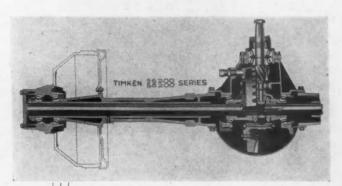


Cams of Wood's New F Hoist are Mounted on Tubular Cross-Members Which are Bracketed and Bolted to the Body Side Sills

# TIMKEN ADAPTS BEVEL AXLES FOR BALLOONS



Accomplishes Change By Increasing Track of 52,000 to 58,000 Series



Housings in Timken's new full-floating axles for dual low pressure tires are made long enough to bring wheel bearings between dual tires. This construction avoids the excessive stresses on axle ends, which occur when wheels overhang the axle. Increased track and location of the brake assembly also offer greater clearance between the brake drum and point of inner tire rim support of duals. The axle housings in the two larger models are more robust and have longer axle tubes

MODIFIED series of bevel drive rear axles designed to fulfill the conditions imposed by the modern light and medium duty motor trucks, due to the use of larger dual pneumatic, low pressure tires on the rear wheels, has been introduced by the Timken Detroit Axle Co. They are a modification of the 52,000 to 58,000 series and are designated by the addition of the figure "200," as follows 52,000.

The use of dual low pressure tires on these axles, with the spacing as recommended by the Tire and Rim Association, is made possible by an increased track, providing the necessary clearance between tires and chassis parts.

In addition to the increased track, the design of the housings and outer ends on these modified axles permits the use of metal wheels which maintain the correct disposition of the tire loads with respect to the wheel bearings and other axle parts. The relation of the brake mechanism to the track has been changed also, necessitating a deeper brake drum. This construction offers greater clearance between the brake drum and the point of inner tire rim support.

#### Specifications of Timken Axles for Dual Pneumatics

		ligh Pressure T	ires			Low Pressur		
Model	Maximum Load on Tires	Tire Size	Dua! Spacings	Dimension Between Inner Tires	Tire Size	Dual Spacing	Dimension Between Inner Tires	Optional Gear Ratios
52200	5000 lb.	Size 5 in.	73/4 in.	491/4 in.	6.50 in.	81/4 in.	48 in.	4 6/7, 5 1/6 5 5/6, 6 1/5
54200	7000 lb.	5 in.	9 in.	48¼ in.	7.00 in. 7.50 in.	9 in. 9 in.	47¾ in. 47½ in.	44/7, 46/7 55/6, 64/5
56200	7000 lb.	7 in.	10 in.	49½ in.	7.50 in 8.25 in.	10 in. 10 in.	49½ in. 49 in.	4 4/9, 5 2/7 5 5/7, 6 1/6 7 2/5
58200	11000 lb.	7 in. 8 in.	10 in. 10½ in.	51½ in. 50¼ in.	8.25 in. 9.00 in.	10½ in. 10½ in.	50½ in. 49¾ in.	5 2/8, 5 4/7 6 1/7, 6 5/6 7 3/6 7 4/5

The Commercial Car Journal and Operation & Maintenance



#### NEW TRUCK SALES

#### Complete New Truck Registrations for March, 1930, and

				'									0													
	Autocar	Brockway-Indiana	Chevrolet	Diamond T	Dodge	Fageol	Fargo	Federal	Ford	G. M. C.	Gotfredson	International	La France-Republic	Mack	Mareland	Relay	Reo	Rugby	Schacht	Selden-Hahn	Sterling	Stewart	Studebaker	White	Willys-Overland	Total Sales by States Including Miscellaneous
ALAMarch 1930 3 mos. 1930 3 mos. 1929		···i	230 850 337	···i	2 14 28		3	2 3	215 763 328	3 11 14		18 61 39		2 9 3		i	1 6 9						1 3	1 10 6	6 4	1,742 775
ARIZMarch 1930 3 mos. 1930 3 mos. 1929			62 159 195		10 44 85		2 2 2		131 307 310	3 10 37		17 59	5	1 3	<u>ż</u>		4 9 13	2 5 5				2 4 3	1 6 20	1 2 2	4 4 10	225 577 748
ARK March 1930 3 mos. 1930 3 mos. 1929		i	118 314 432	2	9 29 66		i	1 5	149 498 729	9 12 27		26 83 107		2 3			2 7 23	1 1 2					· · · i	5 9 15	2 7 10	324 971 1,427
CALIF March 1930 3 mos. 1930 3 mos. 1929	16 36 34	<sub>i</sub>	489 1,063 1,238	2 6 2	121 362 663	27 88	6 23 18	17 45 65	1,366 3,483 3,768	43 122 272	ii	43 123 141	5 10 10	21 67 100	53 126 172		62 190 251	6 19 34			16 50 88	2 13 27	8 34 52	27 74 121	14 37 30	2,395 6,089 7,402
COLOMarch 1930 3 mos. 1930 3 mos. 1929		1 3	98 418 371		9 79 142	···i	18 3	1 2 6	231 778 440	7 54 81	· i	14 102 112	1 1 2	i		2	8 26 21	2					···· 2	17 15	9 38 6	400 1,566 1,220
CONNMarch 1930 3 mos. 1930 3 mos. 1929	8 11 5	4 4 11	108 262 362	5 22	43 86 119		5 8 16	8 14 7	253 499 402	14 24 40		31 64 53	1 1 1	17 28 54		2 3 2	23 48 98		1 2 1	i	1 1 1	9 21 24	11 14	9 16 12	3 8 18	567 1,169 1,262
DEL March 1930 3 mos. 1930 3 mos. 1929	9 14 1	4 8	47 105 111		3 7 12			****	60 124 134	8 14 18		6 12 15	i	2 5 4			1 7 8			i		2 2		<u>2</u>	i	142 304 316
D. C March 1930 3 mos. 1930 3 mos. 1929	9 2	1 2	34 74 106		6 32 12			3	63 149 236	7 18 13		3 5 13		i		1 1	8 10 4				1 2	3		1 8 4	4	131 326 419
FLAMarch 1930 3 mos. 1930 3 mos. 1929	1	5 18 7	123 668 394		6 45 35			3 2	276 1,109 606	7 19 14		10 68 36		3 9 6			6 30 14	3		::			3	4 30 9	3 18 9	2,028 1,138
GA March 1930 3 mos. 1930 3 mos. 1929		5	192 551 664		12 48 48			4 3	292 845 633	4 19 13		23 89 29		4 6			104	1 3					2 3	4 36 31	19 13	545 1,118 1,463
IDAHO. March 1930 3 mos. 1930 3 mos. 1929	····i		50 112 70		4 13 23		···i	::::	94 187 117	5 6		6 13 27		8 8			2 7 9	200	3					1 3 2	1 4	171 360 276
ILLMarch 1930 3 mos. 1930 3 mos. 1929	29	9 28	723 2,056 2,008	77	71 271 566		10 57 42	16 54 56	949 2,636 2,956	61 174 327	2 4	218 636 856	2 12 12	24 58		4 12 19	35 121 201	13	3		15 43 37	6		24 72	45 134 76	2,380 6,994 8,300
IND March 1930 3 mos. 1930		15 54	604 1,378	13 26	47 145		3 16 7	5	817 1.798	36 101		113 280 262		1		7 11 5	32 72 122	1	-			16 33 22	3 23 29	7 25 30	25 61	1,757 4,071 4,032
3 mos. 1929 IOWAMarch 1930 3 mos. 1930		<sub>i</sub>	458 1,025	6	252 24 47		1 2	1 2	401 816			115 283	1 1	2 8		i	12 31 57		1				2 2 8	5 9	25 45	1,076 2,330 2,356
3 mos. 1929 KANMarch 1930 3 mos. 1930		2 3 2	274	2 2	21 83		20 4 8 9		276 634	5 24		40 103	1 3 2	1			26 36		1	·i		2 9	2 5	2 7	19 44	658 1,601 1,973
3 mos. 1929 KYMarch 1930 3 mos. 1930		6 20	166 482	2 3	14 52		3	· · · · · · · · · · · · · · · · · · ·		14		46 119	1	2		7	4 19 45		3 10 3			****	2 5 7	0 15 12	3 15	486 1,376
3 mos. 1929 LAMarch 1930 3 mos. 1930		9	170 473	···i	24 42		6	1	223 583 692	13		30 - 77 91		2	2		3 5					****	· · · · · · · · · · · · · · · · · · ·	1 18 18 17	10	461 1,248
3 mos. 1929 MEMarch 1930 3 mos. 1930		9 10	170 272	1	73 19 39		i		167 253		-	17		1			20 16				3		1 3	2 2	3	391 639 462
3 mos. 1929 MDMarch 1930 3 mos. 1930	2	1 13	458	12	54	3	35	19	685	21		44 87	3 5	13	3		20	3	1	1 2 1	2 5 7	6	7 8	14 29	5 12	809 1,595
3 mos. 1929 MASSMarch 1930 3 mos. 1930	36	0 16	266 527	12 27	88	8	10	14 16 25	663	38	3	66	3	3/	5		41	1	1 1	1 5 3	8	13	5	11	7 16	1,348
3 mos. 1926 MICHMarch 1936 3 mos. 1936 3 mos. 1926	0 6	1 2	418	8 4	60	0	17	19	1,022	-	4	59	14	13	3		22	2	2 1			····i	2 5	11	11 29	1,717
MINNMarch 1936 3 mos. 1936	0	5 4	291	25	3 7	1	3	12	422 922	11		70			4	1 2	15	8	2				2 6	6	16	889
3 mos. 192 MISSMarch 193 3 mos. 193	0		243 556	2	13	3			261 690	10	0	173 26 70			3			1 2	1					15 3 6	5 13	568 1,388
3 mos. 192 MO March 193 3 mos. 193	0 1	9 23	348 1,11 2,05	1 24 6 61	120	0	12	46	2,394	41	7	208		2	5		30	0 1	4		1 4 5	8	11 22	41		3,011
3 mos. 192	9 1	1 25	9: 20	8	31	3	13	1	135	1	5	336			1		1:	4 2	2 .				19	1	12	309
3 mos. 193 3 mos. 192	9	3	24	1	9	1		1	502	3	4	163	3		3		25	9	9 .				1 .3	7	7 6	1,110

Figures in this table are compiled by R. L. Polk & Company, of Detroit, except Illinois, which compiled by the New Jersey Motor List Co., New Car Division of Trenton. Readers desiring

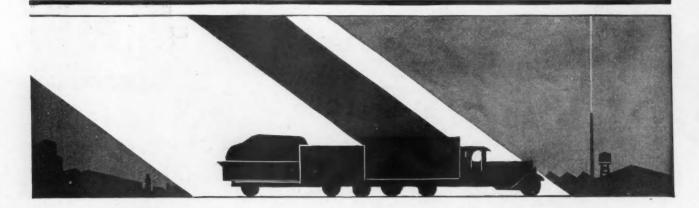
#### BY MAKES AND STATES



#### Comparative Three-Month Totals for 1930 and 1929

	Autocar	Brockway-Indiana	Chevrolet	Diamond T	Dodge	Fageol	Fargo	Federal	Ford	G. M. C.	Gotfredson	International	La France-Republic	Mack	Moreland	Relay	Reo	Rugby		Selden-Hahn	Sterling	Stewart	Studebaker	White	Willys-Overland	Total Sales by States Including Miscellaneous
NEBMarch 1930 3 mos. 1930 3 mos. 1929		10	228 765 730	2 5 3	65		1 5 2	i i	263 920 674	8 44 80		39 171 242		6 9			1 16 38	1 1 4				1 1	2 9	6 8	18 50 4	578 2,065 1,938
NEV March 1930 3 mos. 1930 3 mos. 1929			11 24 59		20 26 50	1	2	i	45 80 109	5 10 7		1 5 10		4 4 1	1 7		1 1 2	1			2 2		···i	4	i	91 156 259
N. H March 1930 3 mos. 1930 3 mos. 1929	···i	8 1	65 104 111	···i	5 14 15		···i	2	91 146 143	1 1 8	X	13 4	2	2 2 1			6 9 7					2 4 6			1 5	186 307 307
N. J March 1930 3 mos. 1930 3 mos. 1929	3 29 46	31 92 46	367 1,007 1,041	6 51 14	60 233 136		8 21 27	8 30 41	675 1,739 1,423	34 102 135	4 4	46 106 101	3 10 10	83 186 147	::::	2 3 5	28 117 129	9 7	1 4	1 6 4	11 33 15	. 11 17	10 18 30	14 68 73	11 39 59	1,448 4,035 3,755
N. M March 1930 3 mos. 1930 3 mos. 1929		2	67 152 118		9 17 36		1	3	62 135 112	2 5 9		1 13 28				::::	7			::			3	3 3	11 2	147 340 321
N. Y March 1930 3 mos. 1930 3 mos. 1929	28 61 95	134 274 343	851 1,911 2,601	47 95 126	150 419 698		12 49 124	22 38 53	1,750 3,408 3,471	167 253 260		130 298 358	3 6 35	85 232 328		3 10 17	80 188 286	25	233	5 14 24	24 61 32	106 191 142	10 26 30	75 155 150	37 82 89	3,801 7,979 9,568
N. C March 1930 3 mos. 1930 3 mos. 1929	8 10 5	1 2	240 681 966	3	23 77 168		4 4	 5	239 678 986	18 78		47 93 59	2	2 7 19			9 13 21		3			3	1 2 5	11 19 7	2 14 19	589 1,640 2,394
N. DMarch 1930 3 mos. 1930 3 mos. 1929		::::	68 151 173	3 3	5 8 20		11		80 191 182	2 4 25		34 97 155					1 6 14		1		****		· · · · i		7 19 4	206
OHIOMarch 1930 3 mos. 1930 3 mos. 1929	6 33 24	16 24 34	493 1,279 1,907	5 13 35	57 161 276		9 23 35	9 21 39	856 2,069 2,152	59 117 142	1	109 259 247	4 5	5 17 55		2 8 5	32 97 160	1	4 11 3 33 7 20	3	4 6	9 20 16	1 9 22	50 119 117	43 104 113	1,813
OKLAMarch 1930 3 mos. 1930 3 mos. 1929	7 9	3 8 23	329 892 854	4 5	41 107 208		4 13 16	4 25	333 963 1,046	30 58 59		49 159	2	8 22 21		1 1	4 36 54	-	2	13 10		7	1 1 9	5 20 22	19 48 35	850
OREMarch 1930 3 mos. 1930 3 mos. 1929	3	_	117 220 306		9 41 88	5 11	1 4 9	3 11 16	211 454 632	18		206 14 34	3	13 13 12	1	::::	9 21 30		2		····i		1 3 11		1 6 6	387 866
PA March 1930 3 mos. 1930 3 mos. 1929	41 95 88	37 100 118	725 1,673 1,751	15	174 401 543		14 37 63	20 40 25	1.421	63	4 6	171 353	8 16 27	65		18 32 31	52 129 234		6 .	4 26	17 72 56	63	13 24	32 87 116		3,044
R. I March 1930 3 mos. 1930 3 mos. 1929	5	3 4	72 119 134	··· i	15 30 75		· · · i	4 5 8	93 175	14	4	293 8 16		5 13		1 1	8		2 .	i ::	1	56	2 2 1	8 17	3 3 5	
8. C March 1930 3 mos. 1930 3 mos. 1929		· · · · · · · · · · · · · · · · · · ·	129 498 478		9 32 63		1 4 1	····ż	121 471	10 22	-	17 3 33	1 2	11			1 6		2 .					6 2 6 4	-	_
8. D March 1930 3 mos. 1930		i	132 325 231		10		2 5 1	1	123 384 310		4	65 180		6		1	12 36 23	-	1 . 3 . 7 .				···i		10 24	370
3 mos. 1929 TENNMarch 1936 3 mos. 1936 3 mos. 1929		3	107		18 77		3	6 20 12	136 556	1:	3	194 27 89	2	18			16		3 .			1 3	2 5 7	2 11 13	1 9	323
TEXAS. March 1930 3 mos. 1930		7 21 27	782	-	35 172		9 34	3	889	2	-	132 461		1.5		1 6	19 70 121		3			1	2	17	-	1.956
UTAHMarch 1936 3 mos. 1936		21	75 129		302 7 11	2 3	24	14	119 285 232		7	551 11 27		36		20	16		4 . 223			4		2		1 23
3 mos. 1929 VTMarch 1930 3 mos. 1930		· · · · · i	29 76	2 2	10		1 1	····i	92		7	111111111111111111111111111111111111111		10			- 6	5	1 .				3			2 46 4 15 8 30
VAMarch 1930 3 mos. 1930		21 3 34 5 12	540 1,192	2	37 84		1 6 1	9 21	506	1 4	6	41 113	1	-	2	3	13 38	3	i			-	3	12	-	2 35 7 1,23 2 2,81 2 1,97
3 mos. 1926 WASHMarch 1936 3 mos. 1936 3 mos. 1926		12	189		37	28	7	5 12	399 848	2	2	31 81	3	-	9	2		8	7 .	: :		1	2 2 40	14	-	3 77
3 mos. 1920 W. VA March 1930 3 mos. 1930 3 mos. 1920		507.00	128	3 3	128 20 66		384		-	1	8 7 9	3:	2	10	8	. 1	10 27	4 1						1	-	4 42
WIS March 1930		4 7	1,02	2 11	36	3	. 6	14	542	2	2	80				. 3	24	0	1	1 .		3	7 2	4	3	2 1,29
3 mos. 193 3 mos. 192 WYOMarch 193 3 mos. 193		1	619	9 44	3	3	13		1,242 1,132 57		8	13:	4		9	. 1	4	9	5 .		2 2	7 1	1		3 2	3 2,34 2 9 7 30
3 mos. 193 3 mos. 192 Total March 193 Total 3 mos. 193 Total 3 mos. 192	19		13,01 32,09 32,60	7	1,598		157 498	228 559	97 19,551 46,992 44,559	93	3 7  6 10 5	2,36 6,12	4 5	5 45 2 1.09 1 1.41	2 5 5 13	6 45 6 103	683	2 2	2	27 1	6 10 9 32	6 26 5 51	5 100	407		9 42,18 0 103,76 4 108,77

is compiled by the Robinson's Advertising Service, of Springfield; and New Jersey, which is town and county lists of owners in any section may address any of these three companies.



#### TRUCK INDUSTRY NEWS

GENERAL

By lengthening the frame and coupling shaft of its 11/2-ton truck 25 in., the Ford company now has a 157-in. wheelbase model. Effective from June 2, prices of Ford trucks have been reduced from \$5 to \$25. The new prices follow: Model A chassis, \$345; Model AA truck chassis, 131 1/2 -in. wheelbase, \$510; Model AA truck chassis, 157 in. wheelbase, \$535; De Luxe delivery, \$545; A panel delivery, \$570; and AA panel delivery, \$780. Better appearance and more comfort characterize new bodies for 1%ton Fords just announced. Radiator and hood are narrower, front fenders have a longer sweep, headlight rims and filler caps are of rustless steel, glass in doors are rectangular and windshield swings out at bottom and driver's seat is wider.

Model D is the designation of a 1 to 1½-ton newcomer to the line of the Federal Motor Truck Co., Detroit. It is a four-cylinder truck and lists at \$830. A detailed description will be published in July.



F. E. TRIEBNER, ACTING REGIONAL MANAGER FOR THE CENTRAL REGION OF THE WHITE CO.



Edwin T. Herbig, new manager of Boston branch of the General Motors Truck Co.

Information from Washington indicates that public hearings in the investigations of trucks, bus and rail coordination by I.C.C. will probably not be held before autumn.

Martin-Parry Corp. has added a complete line of six-wheelers and commercial bodies for the Ford AA truck, according to E. E. Evans, general sales manager.

The Philadelphia branch of the Brockway Motor Truck Corp. is moving into a new sales and service building at 747-753 Allegheny Ave., which G. M. MacWhorter, district manager, describes as a de luxe plant.

The American Oil & Grease Corp., 201 N. Wells St., Chicago, has developed a special lubricant, called Gearo, for use in herringbone, helical, hypoid and spiral bevel gears.

Thirty distributors and executives of the Highway Trailer Co., Edgerton, Wis., met at a two-day conference at the plant recently to discuss future plans.

**FACTORY** 

Coincident with its report of a 30 per cent increase in earnings for the first four months in 1930, as compared with the same period in 1929, the National Motors Mfg. Co., Irvington, N.J., announces that it plans to introduce a new line of low price six-cylinder Day-Elder models next month. The company also announces several improvements in design in its 11/4-ton Model MF Day-Elder chassis. These changes, which will not affect the price, include a new and sturdier bumper and springs and longer wheelbases.

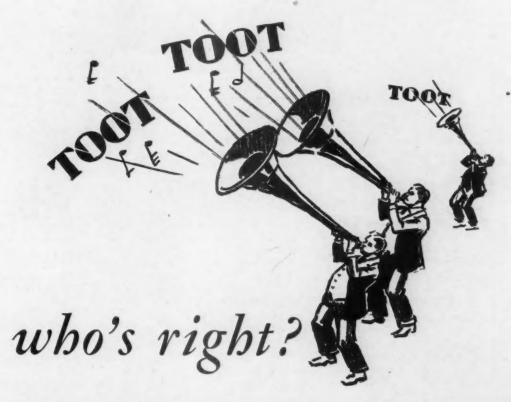
A new replacement carburetor for Model A Fords has been placed on the market by the Wheeler-Schebler Carburetor Co. of Indianapolis, subsidiary of Borg-Warner Corp.

Hercules Motor Corp. reports net earnings for first quarter of \$288,528, as compared with \$283,459 for the same period of 1929.



C. F. SMITH, NEW SUPERINTENDENT OF THE BLOOMFIELD PLANT OF LAFRANCE-REPUBLIC CORP.

The Commercial Car Journal and Operation & Maintenance



It seems to us that you who read this periodical must often think that brake lining advertising is a confused sort of business. So many manufacturers seem to be tooting their respective horns in such a manner as to blow the same tune, regardless of the product concerned. And in much of this tooting a plentiful supply of superlatives is discernible, so that words which would ordinarily have a definite meaning have probably lost a good deal of their value. We do not wish to add confusion to confusion. On the other hand, we do wish to have you realize the facts about Ferodo Linings.

We are trying sincerely to make a product which is not only abreast of competition, but ahead of it. To that end all our allied resources the world over are dedicated—resources which hold a distinguished position in the world's asbestos industry.

The position which Ferodo Brake Linings have won is evidenced by the fact that they are being used with complete satisfaction by the largest fleet operating companies in the country. You, too, can depend upon Ferodo Linings to give you the best service, safety and economical maintenance.

#### FERODO AND ASBESTOS INCORPORATED

Manufacturers of Ferodo Bonded Asbestos Brake Lining in rolls, Ferodo Pat. Die-Pressed Brake Segments, Ferodo M-R Lining and Ferodo M-R Brake Blocks.

Factory and General Offices: New Brunswick, New Jersey

E-6-30



Gramm Motors, Inc., Delphos, Ohio, announces the creation of the Gramm Question and Answer man, who will hold forth at Station WOWO at 9.30 p.m. every Monday and Thursday evening.

Business of Thompson
Products, Inc., for April
exceeds that of any previous month in the current
year, C. E. Thompson, president, stated recently while announcing receipt of a large
order from International Haryester Co. for 450,000 valves.

The Handy Governor Corp. recently closed a contract to supply its product as standard equipment for Mack six-cylinder trucks and on the new 2, 3, 4 and 5-ton IHC trucks.

Output of LaFrance-Republic Corp. for the first four months of 1930 showed an increase of 43 per cent over the corresponding period of 1929, according to a statement by F. D. Soper, vicepresident.

#### PERSONAL

Andrew Lawrence Riker, engineer, inventor and pioneer in the development of the motor vehicle, died suddenly of heart disease at Fairfield, Conn., late in May. Mr. Riker, who was 62 years old, designed Locomobile's first gasoline engine, introduced



RICHARD F. THEALL, NEW ADVERTISING MANAGER OF RELAY MOTORS CORP.

TRUCK INDUSTRY NEWS



Three New Truck executives named by Dodge Brothers. They are Walter S. Graves, center, director of truck sales; K. A. Ridenour, left, and W. F. Clancy, right, assistant director of truck sales

a 5-ton electric truck as early as 1900, and was the first president of the Society of Automotive Engineers, holding the office for three terms.

August C. Fruehauf, chairman of the Board of Directors of the Fruehauf Trailer Co., died during the month of May at his home after six months' illness. Mr. Fruehauf, who was 62 years old, was a blacksmith and horseshoer in Detroit from 1896 until 1916 when he evolved the trailer and formed a company bearing his name.

Peter P. Peterson, Adam Funk and John P. Shannahan were reelected president, vice-president, and secretary, respectively, of the Iowa Truckers' Association at the annual meeting of that body.

F. Alward, formerly district manager of the Larrabee Deyo Motor Truck Co., is now connected with the sales department of the Mack-International Motor Truck Co. at White Plains, N. Y.

Lon R. Smith has been appointed assistant director of sales for Hercules Motor Corp. of Canton, Ohio.

S. Johnson, Jr., has been appointed chief engineer of the Bendix - Westinghouse Automotive Air Brake Co. at Pittsburgh.

At the annual meeting of stockholders of the Yellow Truck & Coach Mfg. Co. the following were elected directors: Oscar L. Arnold, Irving B. Babcock, Marshall T. Boden, Albert Bradley, Ernest R. Breech, Fred J. Fisher, Paul H. Geyser, George A. Green, Harry C. Grossman, Frank V. Hadas, Thomas S. Merrill, John L. Pratt, A. Ritchie, Paul W. Seiler,

John A. Ritchie, Paul W. Seiler, Alfred H. Swayne.

Vincent Bendix, president Bendix Aviation Co., was elected president of the Society of Automotive Engineers, at the summer meeting of that body at French Lick Springs, Ind.

W. N. Potter has been appointed director of sales for United Motor Service, and W. G. Ninnau as sales manager, according to F. A. Oberheu, president.

Wm. J. Bailey has been appointed director of traffic for Electric Auto-Lite Co.

George M. Kryder has been made manager of the truck and bus sales division of the Firestone Tire & Rubber Co.

Henry Krohn, director of sales of the Federal Motor Truck Co., has been promoted to vice-president in charge of sales.



M. K. MILLER HAS
BEEN APPOINTED
SERVICE PROMOTION
MANAGER OF THE
GENERAL MOTORS
TRUCK COMPANY

M. B. Brodhead, manager of commercial tire department of Fisk Tire Co., Inc., Chicopee Falls, Mass., announced that national accounts in future would be listed and serviced through its dealer organization.

## IT IS SIGNIFICANT...

that among the 65 adoptions of Lockheed Hydraulics by truck manufacturers, many are in the bus field.

It is significant, because on buses, more than anywhere else, safety is vital.

And safety is Lockheed Hydraulic's strongest point-in-favor.

A check-up among bus company managers and drivers will reveal an amazing confidence and enthusiasm for Lockheed Hydraulic Brakes.

HYDRAULIC BRAKE COMPANY
DETROIT, MICHIGAN, U. S. A.

# LOCKHEED HYDRAULIC Four BRAKES Wheel

## S. A. E. AMPLIFIES NEW TRUCK DEVELOPMENT

CONTINUED FROM PAGE 25

for higher vehicle speeds, pay-loads and consequent need for bigger and better brakes and finally, by width limitations arbitrarily set by legislation, Mr. Buckendale forcibly impressed upon his audience the increasingly more intimate tie-up of the tire with the design of the vehicle today than ever before, and the fact that engineers must recognize the tire as the starting point in a proposed design. By the use of diagrams he showed how the swing toward low-pressures, especially duals, has affected axle design and why axle, tire, brake and truck engineers must cooperate to solve a mutual problem. Width restrictions limit the amount of space available for mounting units, all of which require more room than ever before. Space must be provided for the driving mechanism, the vehicle springs, brakes and also clearance for the various parts. This is being solved by nesting the brake inside the inner wheel.

The existence of a combination of weaknesses inherent in external brakes was chanted in the premortem requiems of the rapidly passing external brake. Its successor, the internal, possessing the advantages of self-energizing action, simpler linkage, more accurate pre-determination of braking ability and consistent performance, however, has every indication of a long and healthy life. In his outline of modern brake developments A. W. Frehse, of Chevrolet Motor Co., presented mathematical expressions and formulas to pre-determine the performance of brakes with almost the same certainty as that for powerplants. Engineers armed with these mathematical tools will relegate the old cut-and-dry method to the limbo of the past together with misgivings and uncertainties that characterized former brake design. He further made the observation that the 120-degree shoe is better than either the 150 or 180 because of less cam travel and consequently less pedal stroke with a given mechanical ratio.

The paper of John Whyte, chief engineer, Warner Electric Brake Co., on electrically operated vehicle brakes, quite logically followed the discussions provoked by Mr. Frehse, emphasizing as it did the obtaining of any predetermined brake output and securing of maximum performance with the least amount of pedal pressure on the part of the operator. Mr.

Whyte showed how electrical energy can be used as a means for energizing brakes and described the principle and construction of the Warner electric brake. He explained that because electricity was used only to start the braking action, after which self-energizing is entirely mechanical, only a small current consumption is required. Briefly, the Warner brake consists of a magnet mounted on a bearing that is concentric with the brake drum and an armature that revolves with the brake drum. Projecting from the magnet are two lugs. which are interconnected with a brake band. When the magnet is energized by current it is pulled around by the armature until it brings the band in contact with the drum, after which mechanical self-energizing takes place.

"We are now in another transmission era" which is directly attributable to the demand for higher average-speeds. This interest-provoking observation rolled from the tongue of F. C. Pearson, of the Reo Motor Car Co., who gave a thorough-going dissertation on "Constant-Mesh or Sliding Gear Transmission." Mr. Pearson pointed out that in order to reduce wear of the engine, vehicles are geared so that high speeds can be obtained without too high engine speed. For this reason he declared that the present tendency is to build transmissions that will have high-gear quietness in second and third gear, which makes possible the use of lower ratios when desirable. The greatest advancement has been made in the internal, herringbone and helical gear types which overcome shifting difficulties and noise while running in gear. All these are of the constantmesh type and shifting is done through multi-jaw clutches. type of gearing and shifting has only been used for high and second speeds because its use in first and reverse gears is not considered practical.

H. V. Middleworth, superintendent of operation, Transportation Department, Consolidated Gas Co. of New York, who in a paper on "Self-Maintenance as Compared with Service Station Maintenance," gave a comprehensive outline of his company's maintenance policy and organization, said that the variable conditions under which fleets operated made it impossible to establish a fixed rule governing maintenance. He added that while it was equally difficult to

determine what the minimum number of vehicles should be to justify establishment of a self-maintenance organization, he suggested 40 units as a dividing line between self-maintenance and service station maintenance. The large operator with equipment separated into small fleets in remote localities is materially in the same class as a small owner as he cannot economically afford to travel many miles to a distant central self-maintenance shop. Mr. Middleworth, however, cautioned that before any definite decision is made regarding the advisability of each form of service a careful study should be made of the conditions under which the fleet operates.

#### Roadside Vendors Buy Trucks to Sell Truck

CONTINUED FROM PAGE 20

flowers, cold storage apples, eggs, honey and grape and cherry juices. As spring lengthens into summer, I add berries and green vegetables. Our heaviest season is harvest, when corn, apples, peaches and potatoes come in.

"I use a 1½-ton Chevrolet with an express body having extra boxes beyond the flares for hauling asparagus and small box products. The truck is an indispensable part of the business, hauling supplies from the farm, from neighboring farms and from other sources of supply to the stand. The truck is particularly busy during harvest, hauling potatoes and peaches. It is also a convenience on the farm for hauling fertilizer, feed and tools."

Rocco Riccardi, an independent, located on the White Horse Pike on the road to Atlantic City, uses an old Ford truck for hauling his supplies for a combination roadside produce and refreshment stand.

Merchandise sold on stands is not confined entirely to farm products. There are many operators who are meeting with very satisfactory success in handling evergreens, wickerware, home-made jams and jellies, etc.

An interesting slant on the possibilities of roadside retailing is reflected by the experience of a mid-western canner. This company established 12 roadside stands for the sale of jams and jellies on farms along main highways in two Mid-West States, many of which are open throughout the year. These stands are supplied with fresh stock once a week by truck. Arrangements were made with farmers' wives to tend the stands. The company reports that these stands have achieved a daily average of \$100, running as high as \$175 on some days. The record sale for one month was 7000 jars.



# Only GENERAL MOTORS TRUCKS can offer such values and such completeness

This magnificent six-wheeler is typical of the whole 1930 General Motors Truck line, in modern performance and value.

It is available in 7 standard chassis and tire combinations—wheelbases of 185¼", 201" and 220"—covering every requirement in the 5-7½-ton range.

This great truck has speed that has been unknown in this capacity range—with a tremendous reserve of pulling power: a modern six-cylinder engine of 94 actual horsepower. Giant double-channel frame of 9-inch pressed steel, with unique "stress absorber." Two worm-type, full floating rear axles, interconnected by huge torque rods and self-aligning beams. Big, sturdy auxiliary springs. Westinghouse air brakes on all four rear wheels.

It is a value truly sensational—typical of the whole great 1930 line. Only real leadership in en-

gineering and manufacturing could produce it.

Whether you own and operate trucks, or sell them, you owe it to yourself to find out, first-hand, all that General Motors Trucks offer you in 1930.

GENERAL MOTORS TRUCK COMPANY, Pontiae, Michigan (Subsidiary of Yellow Truck & Coach Mfg. Company)... GENERAL MOTORS TRUCKS... YELLOW CABS... COACHES...

Factory Branches, Distributors, Dealers—in 1500 principal cities and towns.

(Time payments financed at lowest rates by our own Y. M. A. C.)

#### GENERAL MOTORS TRUCKS

# Basel Balances Basel Ba

... when its low price is more than offset by short, unsatisfactory service. More and more operators are finding this out—and adopting New Departures for replacements!

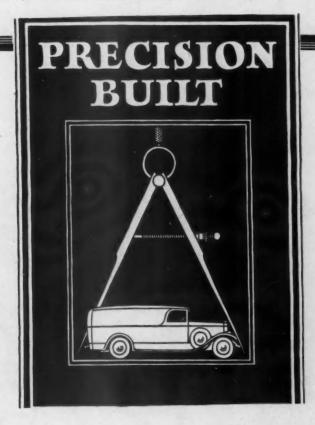
More and more truck operators are learning by costly experience that bargains in bearings don't pay! They are finding that bearings sold largely on "price" all too often deliver a "price" brand of service.

By the time he has footed the bill for a few mistakes of this sort—figuring in the cost of the bearings, loss of productive time, and possible damage to other units of the truck—the owner is usually in a frame of mind to examine quality more closely. That is when most

operators adopt New Departures for replacements. Those who have done so report consistently good results. For New Departures not only make it possible to run longer between periodic overhauls, but reduce the possibility of bearing failure to its very minimum. They yield more miles of service per dollar . . . and that is the vital thing!

Our handy directory of sources of New Departure Bearings will be sent you on request. Address the Direct Branch of United Motors Service in the nearest of these cities: Atlanta, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Dallas, Denver, Des Moines, Detroit, Indianapolis, Kansas City, Los Angeles, Memphis, Milwaukee, Minneapolis, New Orleans, New York, Oakland, Omaha, Philadelphia, Pittsburgh, Richmond, San Francisco, Seattle, St. Louis, Toronto.

# AUTOCARS CAN HELP YOU Pay For Those Other Trucks



#### FREE!

An 8x10 mounted print, suitable for framing, of the modern Autocar "Blue Streak" Six photograph taken by Richard T. Dooner, one of America's leading photographers ... The Autocar "Blue Streak" Six, precision-built to meet today's needs for full load performance at any speed over longer periods, is the last word in an ultra-modern power plant for ultra-modern motor trucks.



We quote from a recent letter, "I was an enthusiastic [well-known name] user for many years and felt entirely satisfied until I bought my Model T Autocar. This Autocar has helped me pay for some of my [same well-known name] trucks, as well as paying its own way."

Did you ever think of it that way? It's a plain, simple fact; capable of easy proof! The reason is because Autocar trucks are the best trucks at any price on the market today. They are precision-built. They are modern. If better trucks could be built, our Factory and ours only would be building them.

#### AUTOCAR TRUCKS

The AUTOCAR Company, Ardmore, Pa., Established 1897

# Range...

Behind each of the nine Day-Elder basic models stands a record of precision engineering and construction based on field studies made in nearly every industry requiring road transport.

The fact that Day-Elders have been selected as standard equipment in so many of the major industrial fleets is proof of their ability and quality.

From the 1½-tonner up to the massive 8 to 12-ton Six-Wheelers, Day-Elder design reveals strict attention to the specialized mechanical requirements of modern haulage problems.

Write or wire for details of our attractive franchise plan.



# DAY-ELDER

NATIONAL MOTORS MFG. CO. IRVINGTON, N. J.

Export Office at 15 Park Row, N. Y. C.



### Spotlighting a unique superiority of BUDD DUALS

together, you hear falk about switching from 20-inch to 22-inch rubber. For these larger balloons give you greater carrying capacity, greater mileage and greater brake-drum clearance.

Many an operator believes that this change is necessary and economical for him. And when he starts the job-right away he runs into one more great advantage of being on Budd-Michelin Duals.

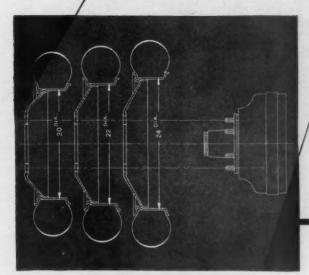
For, if his wheel equipment is not Budd, this important tire change means changing his bubs, too-perhaps even his axles!

But with Budd equipment, all wheel di-

WHEREver truck or bus operators get ameters-20,/22 or 24-inch-are interchangeable on the same bub. So, to shift to the new tire-size, you need only change your Budd wheels - a change-over that's simple,

swift and inexpensive!

Budd-equipped vehicles are already prepared to make any tire change you want. They ve always been prepared for this trend toward larger tires. This readiness to meet any of/your changing wheel needs is another instance of the extra service and operating economy deliberately built into every Budd Dual. With Budd equipment, you can take advantage of every wheel-move in automotive progress!



The Commercial Car Journal and Operation & Maintenance

#### **BUDD DUALS**

BUDD WHEEL COMPANY

Detroit

#### SERVICE ALL MAKES AND THE CASH TILL 'LL TINKLE

CONTINUED FROM PAGE 23

so forth. I believe a repairman, if he is of fair intelligence and has worked diligently at his calling for several years or so, can be depended upon to turn out a good job of any vehicle. Nowadays pleasure cars and light and heavy trucks are not so complicated in construction, or so different in construction, that the average mechanic can not, after brief endeavor, master their intricacies. I, therefore, have an employee work on any truck available for repairs, shift him at any time if necessary to some other job, and consequently he is 100 per cent useful and no per cent ornamental-wherefore my profits, all other factors being equal, are as large as I anticipate.

"In time, probably claims a different mind, you will discover your work is inferior and will thus lose trade. I make rebuttal to explain that in my seven years of active operation in Miami no customer has yet complained of inefficient work and transferred his patronage elsewhere, but on the contrary many have recommended us to others-which should attest to the ability of my mechanics to repair, capably, any make of truck, and to the practicability of my method. As a matter of fact, this very same system of unspecialization has annually procured for me more and more numbers of good patrons locally. Recently a laundry, a construction firm and a meat distributing company, each of them having a dozen or so trucks, have given me the job of keeping their automotive fleets in prime condition."

Mr. McGrady paused with a sothat's-that air.

I then remarked to this successful general repairman that I had heard, and knew, that many truck dealers who maintained their own service departments actually lost money by such operation, and I asked if he would theorize as to the main reason.

"In many cases it is failure to go after business," he rejoined promptly. "Waiting for jobs to roll in makes profits roll out. In others, it's lack of supervision; I know that because I've been through the mill. I used to lose money by being too good-natured and careless with my workmen, and now I have reformed, and both myself and workmen have more money. See those rules?" he asked, nodding to printed placards that were over each mechanic's bench. "Well, place them in every shop and you will find the

bookkeeper will use more black and less red ink."

These were the rules: All jobs must have work orders from the office: no time will be paid for unless jobs are officially authorized. Check all the items to be done on jobs, and report items possibly overlooked or needed. See that the car or truck is clean when finished. Men paid by the week will report for work promptly at 8 A. M., and others as per previous arrangement. Each man must clean and keep clean his own working space. All shop equipment, electric drills. wrenches, wheel pullers, etc., must be put back in their proper place after each operation. Every job must be thoroughly tested and passed on and have foreman's O. K. All employees' cars must have work orders the same as customers' cars. Waste and rags must be charged to jobs being done. Any employee waiting for parts shall not talk to others that are busy or loaf around other jobs.

Queried about the calisthenics of his cash register, in relation to repair work, Mr. McGrady admitted they would total \$2,500 per month. Of course some of this comes in from those benzine buggies addicted to humans only. Eighteen mechanics participate in this ambition to make a perfect traffic jam every Sunday afternoon, and every Monday take the dents out of accidents.

Mack's Garage offers storage facilities, the usual repair and electrical services, and sells many accessories. It is said to be the best-equipped shop of its kind in the South. Mr. McGrady is democratic and versatile and can adjust accounts, carburetors, and employee's grievances, and so forth, as time or occasion warrants.

And don't, in conclusion I respectfully beseech, get the idea Mr. Mc-Grady's is a frivolous line. The only line he has is a line of cars and trucks waiting to be repaired.

#### Is a High Gear Low And a Low Gear High?

CONTINUED FROM PAGE 21

using the term about mathematical ratio and gearing. High gear ratio, meaning a ratio which gives high gearing or high speed, is just the opposite of high gear ratio, which denotes a high ratio and slow speed.

Rear axle gears can also be considered from the standpoint of reduc-

tion in speed provided by pinion and ring gear or worm and worm wheel. An engine speed of 2000 r.p.m. is reduced to 400 r.p.m. by a 5 to 1 ratio and to 200 r.p.m. of rear wheels by a 10 to 1 ratio. Therefore, a 10 to 1 ratio gives a greater reduction than a 5 to 1. Greater reduction may also be called higher reduction, and high reduction results in low vehicle speed for a given engine speed.

Short terms which cannot be easily misunderstood are desirable, especially when there is possibility of confusion with abbreviations of long terms. Terms slow and fast may be used in place of high and low as applying to ratios or gearing. A slow axle ratio is one which results in slow speed, comparatively, of a vehicle for a given engine speed; a fast rear axle gives higher speed to the vehicle.

A collection of axle ratio terms in common use is given in the accompanying box. They have been classified in two groups, those denoting high speed and those meaning slow speed.

#### Honk-Honk! The Circus Is Trucking to Town

CONTINUED FROM PAGE 28

portation routine of a motor circus with that of the conventional circus. The latter comes into a town via railroad. After much switching, it comes to halt on a siding usually remote from the circus grounds. Wagons are unloaded from flat cars and pulled by draught horses to the circus grounds. Performing horses and elephants are coaxed out of box cars and led to the circus grounds. After final performance at night this procedure is reversed in its entiretyonly operations are more difficult and hazardous because of darkness which flickering torches cannot entirely dis-

Now take the motor circus and note its simplicity. Fleet moves from circus ground in one town directly to circus ground in next town and unloads. After final performance, loads and moves directly to circus ground in next town. Which makes possible the saving of \$20,000 each month, and enables the circus to cover an itinerary of 200 towns over a 10,000-mile route, equivalent to more than three trips across the United States.

Other large circuses, it is known, are planning to go to trucks. Soon even the largest may be speeding over the improved highways, which naturally have been greatly instrumental in promoting the movement to trucks.

# -and good for more!

This tire was one of the left dual rears. The tires on the truck gave the following mileages: Left Front, 73,331 miles

Right Front, 61,090 miles

Right Rear Duals, 69,685 miles

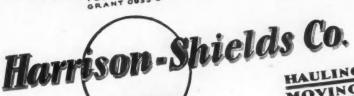
Left Rear Duals,

87,794 miles

Average for all Six,

74,895.5 miles

on Harrison-Shields Rela







Office and Warehouse 1607-11 CENTRE AVENUE Pittsburgh

March 25, 1930.

Mueller Brothers, 5101 Baum Blvd., Pitt sburgh, Pa.

Sub ject: Tires on Relay Truck Equipment.

With further reference to our conversation regarding the mileage with nurther reference to our conversation regarding the mileage on our Model 60C Relay Truck which operates between Pittsburgh and Cleveland, wish to say that this truck does approximately 310 miles a day, six days a week, and the tires, in fact the whole truck, is doing day, six days a week, and the tires, in fact the whole truck, is doing Gentlemen:

This truck is equipped with pneumatic tires all around end the first two tires on the rear wheels were taken off at 69,685 miles on the tires on the rear wheels were taken off at 69,685 miles on the tires having been cut. The other two tires on the rear wheel were we kept for a spare. The other two tires on the rear wheel were taken off at 87,794 miles, and although they looked good for more miles taken off at 87,794 miles, and although they looked good for more miles taken off at 87,794 miles, and although they looked good for more miles taken off at 87,794 miles on the rear wheels were taken off at 87,794 miles on the rear wheels were taken off at 87,794 miles on the rear wheels were taken off at 69,685 miles on the other tires having to the same taken off at 69,685 miles on the other tires having the same taken off at 69,685 miles on the other tires having the same taken off at 87,794 miles on the rear wheels were taken off at 87 This truck is equipped with pneumatic tires all around and the exceptionally good work.

We are fully satisfied that the Relay axle design effects a saving to the operator in cost of operation, particularly in the cost of tires, and without question it is the writer's opinion that this exceptional mileage is due to the action of the Relay axle. of delay. mileage is due to the action of the Relay axle.

At this writing, this particular truck has gone over 100,000 miles and we have not replaced any axle shafts, track, pinion, or differential end we have not replaced any axle shafts of any nature, proving it to be the gears, in fact, no gears or shafts of any nature, proving it to be the most successful rear exle we have ever operated. HARISON SHIELDS CO.

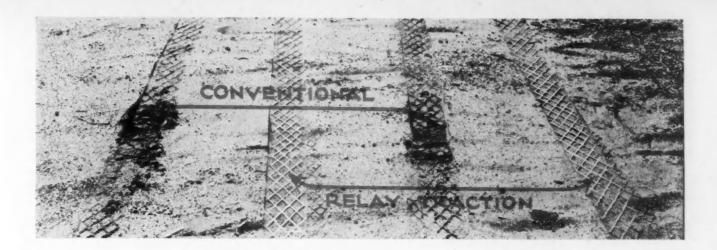
of Pitts-

ison, member of the firm of Harrison whields Co., of Pitts, and Sam Martin, driver of the above vehicle, being duly around to law, claim that the information given above is the best of their knowledge.

The Harrison was been membered and sworn to before members and sworn to before members.

JANE F. LAWLER COMMISSION EXPIRES

COMMISSION EXPIRES MARCH 66. 1931



# MILLIONS of MILES Prove Relay's Tire Savings

Day in and day out this Relay truck operates over the mountainous roads between Cleveland and Pittsburgh. The record mileage of 87,794 is accounted for by virtue of Relay's saving 70% of the horizontal impacts received when carrying a full load. There is no slipping and spinning of the Relay rear wheels when starting due to the fact that the load moves before the rear wheels start to turn. In this way the rear wheels are pulled when starting rather than pushing the truck in order to gain momentum. As illustrated in the above picture the tread marks left by the Relay are clear and distinct as contrasted with those of the conventional truck whose rear wheels must spin in order to gain traction when starting. And in stopping, the tread marks of the Relay show no signs of the sliding which is so hard on tires. The Relay drive gives constant traction at all times whether starting, stopping or meeting road irregularities.



This is the truck which was equipped with the tires giving this record mileage. The daily mileage is approximately 310 miles over the scheduled route between Cleveland and Pittsburgh.

RELAY MOTORS CORPORATION will gladly send you your copy of this monograph on "Trucking Costs." Please sign this card and return

Name of Company

Signature

A valuable 48 page book just published

CLIP & MAIL THIS

# Why Relay Saves 34 Per Average Mile

HE Relay Drive does for the truck forward what the springs do upward. The load instead of being rigidly fixed above the the wheel center. This horizontal oscillation reduces the shocks center of the rear wheels is free to swing pendulum-like below of travel approximately one half; uses the load to help propel and oscillating drive reduces tire costs one-third, fuel cost a tenth, and depreciation and maintenance costs one-fourth each, giving an average saving in the total cost of transportation of  $3\phi$  per mile. retard the vehicle; and gives greatly added traction.

approximately one-half. If a conventional truck has a life of 4 fered over normal roads at normal speeds are shown to be reduced tire mileage 68% greater than with conventional trucks. By in-The results of a questionnaire to 300 Relay owners show actual terposing a horizontal defense against road shock, the impacts suf-



years, the Relay truck will have a life onethird greater, or 5% years. The lowered im-

a third. These lessened road blows naturally benefit the cargo as well as the truck. Less breakage of perishable goods, better condition of milk, furniture, flowers, etc. are the results. A truck that pacts result in reduced crystallization in all moving parts. This reduction gives an average saving in repairs amounting to more than Speed need not be lessened because of rough going. More time is can negotiate difficult road conditions gives added daily mileage. spent on the road thus further increasing average mileages. The savings with Relays have been proved by the experience of hundreds of owners, -3¢ per average mile.

RELAY MOTORS CORP., Lima, Ohio

#### COMMERCIAL CAR JOURNAL

AND OPERATION & MAINTENANCE

#### TABLE OF TRUCK SPECIFICATIONS

Corrected Each Month From Data Supplied Direct by Manufacturers

(KEY TO ABBREVIATIONS ON PAGE 80)

COMPLETE new line of trucks of one maker, and additions to lines of ten other manufacturers are listed for the first time in specifications tables in this issue. Make, models and capacity listed comprise:

Autocar TFA 5-ton, F 71/2-ton, G 6-wheel 10-ton. Federal D 1-11/2 ton.

Fisher Standard, new line of models in %, 1, 11/2, 2, 21/2, 3, 31/2, 4 and 5-ton classifications.

Indiana Model 195 3-ton, Model 195 31/2-ton.

IHC A-4 2-ton, W-1 21/2-ton, W-3 31/2-ton and tractor truck models W-1, W-3 and W-4. Kenworth 165 3-tons, 385 5½-tons and over.

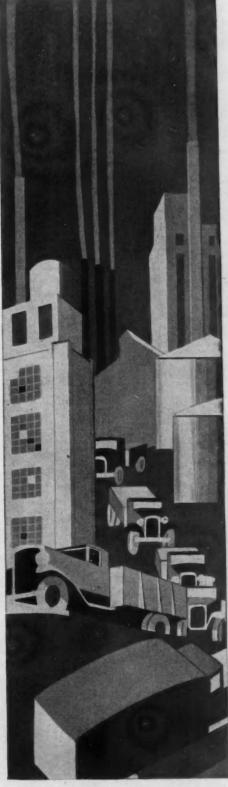
LaFrance-Republic AA1 1-ton, F-2 3-ton.

Relay 15AB 1-ton, 60DA 21/2-ton, 60DB 3-ton, 60DC 31/2ton, 100AC 5-ton.

Reo GCS 3-ton.

Wichita 6-21, 11/2-ton.

Witt Will S15B, C15B, 11/2-tons; C2B, C2W, R2B, R2, 21/2-tons; R3B, 3-tons; R3B, 31/2-tons; R4, R4X, 4-tons; R5, 5-tons; R55, 51/2-tons or more.



				Ger	eral		Tire	Size				E	ngine							Fue		Elect		
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		Clutch	Gear	Se	t		No.	Re	ar A	xle			Front Axle	Bra	kes			Frame		Body	Mour	ting	Spi	ings	_	
	Radiator Make	Type and Make	Make and Model	ation	No. of Forward Speeds	At. Locat, and Speeds	Universals Make and P	Make and Model	Final Drive and Type	Drive and Torque	Reduc, in High		Make and Model	Service	Area Service Brakes	Hand	Steering Gear Make	Dim. Side Rail	Type	Cab to Rear of Frame	Cab to Rear Axle	Width of Frame	Front	Rear	Auxiliary Type	Line Number
1 H 2 M 3 O 4 L 5 H 6 M 7 F 8 F	on Iar	P.Own P.Roc D.Own P.Own P.B&B P.B&B P.B&B	Own Int. Own Own Pontiac W-G War Own	ממממממממ	***************************************	No No	Own U-P Own M.M. Spi Spi M.M.2 M.M.2	Own Int. Own Own Pontiac Sal Adams Own	SESSESSES SESSESSESSESSESSESSESSESSESSES	H	4.7 4.42 4.45 4.4 4.55	14.3 14.7 14.0 14.6	Own Int. Own Own Own Pontiac Sal Adams Own Own	LAIH SAIM SAIM BOAYM BAIM	200	12X	Own Gem War Jac Ros War Own Own	5x134x4 5x134x4 534x2x4 43x134x4 534x134x4	000: 0: 0:	52%	26%	43 1/4	36x2	53 ½ x1 ½ 54x2 55x2 49 ½ x1 ¼ 49 ½ x1 ½	ZZZ Z Z	
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				Ger	neral	_	Tire	Size				E	ngine						•	s	Fuel	m	Syst	ical em	
Line Number	Make, Model and Capacity	Chassis Price	Standard W.B.	Max. W.B. Furnished	Gross Vehicle Wt. (See Key Note)	Chassis Wt. (Stripped)	Front	Rear	Make and Model	Number of Cylinders Bore and Stroke	Piston Displacement	N.A.C.C. Rated H.P.	Max, Brake H.P. at.		Piston Material	Dia. Main Bearings	Length Main Bearings		Oiling System	Governor Make			Ignition System Make	Generator, Starter Make	Line Number
444444444444444444444444444444444444444	Fisher-Standard   16A     Fisher-Standard   17A     Fisher-Standard   17A     Fisher-Standard   17A     F.W.D	1355 1380 1380 1380 1405 1415 1415 1415 12950 1525 522 522 19900 1525 522 19900 19900 11990 1190	146 142 142 142 143 144 166 166 166 166 166 166 166 166 166	1600 1688 1688 1688 1688 177 1688 177 1688 177 161 1688 177 161 1688 177 161 163 163 163 163 163 163 163 163 163	7900 7900 9000 9000 9000 8500 8650 8570	36959 3757 4400 4505 4505 4505 4505 4505 4505 4	P 32x6 P 32x6 P 32x6 P 32x5 P 32x6 P 32x7 P	P 32x6 DP 32x6 P 36x6 P 36x6 P 36x6 P 36x6 P 32x6 DP 32x6 DP 32x6 DP 32x6 P 34x7 P 34x7 P 32x6 DP 32x6 P 32x6	Own Own Bud WTU Bud H86 Con 16C Con 17E Con 16C Con 84	6-3-3-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-	224 0 251 0 214 7 248 2 251 3 221 6 221 0 221 0 224 0 224 0 224 0 224 2 241 2 259 8 248 2 24 1 283 283 283 309 241 283	25 6 27 3 27 3 27 3 25 6 27 3 22 5 0 22 5 0 22 5 0 25 3 0	63-3200 63-3200 63-3200 63-3200 63-3200 63-3200 63-3200 60-250 60-250 60-250 60-250 60-250 60-250 60-250 60-250 60-250 60-250 60-250 60-270 50-200 50	LLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLL	000000000. 000. 000	22 22 22 22 22 22 22 22 22 22 22 22 22	10000000000000000000000000000000000000	SEPRET   FEET   FEET	008P0PPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPP	Ha z z z z z z z z z z z z z z z z z z z	den	VVVVVV AAAAVVVV AAAAVVVVVV AAAAAVVVVVVVV	EEEEELLRLLLWWLLLRRRLLLBRRRRRRRRRRRRRRRRR	NNNNNNA-LLRRAA-LLRRAA-LLRRARRALLLRRRRRALLLRRRRRALLLRRRRALLLRRRRRALLLRRRRALLLRRRRALLLRRRRALLLRRRRRALLLRRRRRALLLRRRRRALLLRRRRRALLLRRRRRALLLRRRRRALLLRRRRRALLLRRRRRR	111111111111111111111111111111111111111
6	13/4 Ton SanfordA	x	. 18			. 300	0 P 34x7	P 34x7	Con 18E	6-3%x4			3 61-300	-			1	7	PC	No	Str	v	D-R	D-R	
	2 Ton  33 Amer. LaF Chief 9  4 Atterbury.  45 Aviocar.  56 Aviilable. T-4  57 Available. T-5  58 Available. T-5  59 Available. T-7  50 Available. T-7  60 Available. T-7  60 Coleman.  60 Coleman.  60 Coleman.  60 Coleman.  60 Commerce. Sept.  60 Corbitt. 120  60 Day-Elder. Her.  60 Day-Elder. Her.  60 Day-Elder. Her.  60 Dege Bros.  60 Dodge Bros.  60 Fw.D	GI 199 301 302 22 25 31 31 31 31 40 40 40 32 28 40 32 28 40 32 28 40 32 28 40 32 41 15 17 17 17 17 17 17 17 17 17 17 17 17 17	36 14 00 14 00 14 11 11 11 11 11 11 11 11 11 11 11 11	150 19 p Oi p Oi p Oi	0 995   100	01	0 P 32x6	DP32x6 S 34x8 DP32x6	Own Lye 48L Own 16C Con 16C Con 16C Con 30 B Wau V K Bud KPU Bud Des Bud Res Con 16C C	6-3 ½ x5 6-3 ½ x5 6-3 ½ x4 6-3 ½ x4 6-4 x4 ½ 6-4 x4 ½ 6-3 ½ x4	298 263 298 309 241 3248 311 248 248 228 221 241 241 241 241 241 241 241 241 241	6 27, 0 33, 2 27, 0 38, 0 38, 2 27, 2 27, 3 28, 0 33, 27, 27, 27, 27, 27, 27, 27, 27, 27, 27	3  52-22  73-21  165-27  4  72-24  4  72-24  3  65-27  9  50-22  7  66-24  3  78-30  3  78-30  3  78-30  3  78-30  3  78-30  4  58-26  4  58-26	00 I	3000	22232222222	8	277 377 4777777 77777777737777 44774 77777777	FPCPCCFFPCCCCPPCCCPPCCCCCCCCCCCCCCCCCC	No Ha Ha No Wa KP No KP Wa No	Str Zen Str Zen	GVMMVVVMMMGGVVVVVVVVVVVVVVVVVVVVVVVVVV	PALINERRE ALLICE ESS RELLICE ES LE RERLICLE SE ACUDO A A A A A ANNIN'N'N A DOUB A A LLICE ES DU A A ANNIN'N N'N A DOUB A A A ES ES A A DOUB A A A ANNIN'N N'N N'N A DOUB A A A ES ES A A DOUB A A A A A A ANNIN'N N'N N'N A DOUB A A A ES ES A A DOUB A A A A A A ANNIN'N N'N N'N A DOUB A A A A ES ES A A A A A A A A A A A A N'N N'N N'N N'N	D-R A-L N-E N-E N-E N-E N-E N-E A-L D-R D-R A-L A-L N-E N-E L D-R D-R D-R D-R D-R D-R D-R D-R D-R D-R	

	Clutch	Gear	set			No.	Re	ar A	xle			Front Axle	Bra	kes			Frame		Body	Moun	ting	Spr	ings	
Radiator Make	Type and Make	Make and Model	Location	No. of Forward Speeds	Aux, Locat, and Speeds	Universals Make and	Make and Model	Final Drive and Type	Drive and Torque		Reduc, in Low	Make and Model	Service	Area Service Brakes	Hand	Steering Oear Make	Dim. Side Rail	Type	Cab to Rear of Frame	Cab to Rear Axle	Width of Frame	Front	Roar	Auxiliary Type
1 Fed 4 Fed 3 Fed 6 Fed 7 Mod 10 Lon 11 Lon 11 Lon 12 Lon 12 Lon 12 Lon 13 Fed 14 Fed 15 Fed 16 Fed 17 Mod 10 Lon 11 Lon 18 Lon	D.B-L P.Own D.B-L	Own Own Own Own B-L 35-4 W-G T38I B-L 35 B-L 235 B-L 214 Own AB Own AB Own AB Own AB B-L 35 B-L 35 B-L 20 Own Own Own Own Own Own Own Own D-L 35 B-L 20 B-L 35 B-L		444433444444444444444444444444444444444	No No No No No No No No No No No	M.M.M. M.M.M. M.M.M. Spi	Tim 54000 the Tim 6462 tim 5400 the Tim 5400 the Tim 5200 the Eat 1002 tim 5400 tim	BFFBFFBFFCCIRERES	HEH R BREEFEFF REF REF 1111	5.56.56.56.56.58.83838.8866.58.82.82.16.56.86.86.86.86.86.86.88.87.66.65.88.83838.88866.58.88.86.86.86.86.86.86.86.86.86.86.86.86	36.84 36.84 36.83 36.84 36.85	Own	LAIH LAIH LAIH LAIH LAIH LAIH LAIH OZIM OZIM WAIM BAIM BAIM BAIM	299 437 4380 452 252 358 432 300 304 344 344 452 452 452 452 452 452 452 4	TX TX TX TX TX TX TX TX TX TX TX TX TX T	ROS	5 14 x 2 14 x 1 5 14 x 3 x 14 6 14 x 3 14 x 1 5 14 x 2 14 x 1 6 x 2 14 x 1	COCCO PROC CCCCTTTTPCCC PCC . C.C.	144 127 110 199 114 127 127 127 127 127 127 127 127	48 48 60% 73% 66 54 68 4 81 613 82 76 66 62 63 83 86 64 77 91 91 91 91 91 91 91 91 91 91 91 91 91	3444443344433444433444433444344433444344433444334443344334433443444343	38x2 38x2 38x2 38x2 40x2 41x2 41x2 41x2 41x2 42x2 4x2 4	56x3 56x3 56x3 56x3 56x3 56x3 56x3 56x3	KZZEKKKZZZ. Z.
62 Fee	D.B-1	B-L	-	U	3	Blo	Eat	S	16	. 6.3	38 26	.4 Eat				. Ros			. 107	36 66	14			
63 G4 Fee 65 Pee 66 You 66 You 67 You 69 You 69 You 71 G4 73 Ch 72 Pee 77 You 60 You 72 G4 73 Ch 74 Pee 77 You 74 Ch 74 Pee 77 You 74 Ch 74 Pee 77 You 74 YOU 74 PEE 77 YOU 74 YO	11 D.B-II 12 P.London 13 P.London 14 U.D.B-II 14 U.D.B-II 15 D.B-II 16 D.B-II 16 D.B-II 17 D.B-II 17 D.B-II 17 D.B-II 18 D.B-I	B-L 35- B-L 214 B-L 25- B-L 25- B-L 25- B-L 35- B-L 35			4 NO 0 4	Spi Spi Spi U-P U-P U-P U-P U-P U-P U-P Spi Blo	Tim 63721 Tim 637021 Tim 637021 Tim 637021 Tim 63702 Tim 6400 Tim	SWISWWIS ZAWAW ZAWAW BY BARRER WAS SERVED BY SERVED BY BARRER WAS SERVED BY BARRER BY SERVED BY BARRER BY SERVED BY BARRER BY SERVED BY BARRER BY	FIFTH FIFTH FILTER FOR A STATE OF THE STATE	H 5 6 6 6 R 7 8 6 5 6 6 C C C C C C C C C C C C C C C C	80 34 78 30 8 43 3 46 3 39 25 38 85 31 66 35 25 33 25 33 105 15 5 34 8 29 9 106 66 41 8 25 9 106 8 25 9 106 8 25 9 106 8 25 9 106 8 25 8 25 8 25 8 25 8 25 8 25 8 25 8 25	8 Tim 14703B 0 Tim 12703 I 9 Tim 12703 I 9 Tim 14703 Shu 5429 7 Shu 5429 7 Shu 5429 6 Shu 5572 6 Shu 5572 6 Shu 5572 6 Shu 5672 6 Shu 5470 6 Shu 14703 7 Tim 1470	AIH   AIH	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	TD TX	Rose Rose Rose Rose Rose Rose Rose Rose	7 x2 /5 x /6 7 x2 /5 x /6 6 x2 /5 x /6 7 /6 x3x /6 7 /6 x3x /6 1 0 x3 /6 x /6 1 0 x3 /6 x /6 1 7 x3 /5	10000000000000000000000000000000000000	P 10 C 12 C 12	4 63 Opt	56 34 34 34 34 34 34 34 34 34 34 34 34 34	37x2 ½ 40x2 40x2 40x2 43x2 ½ 40x2 ¼ 42 ¼ x2	46x2 ½ 54x3 54x3 54x3 54x3 54x3 54x3 56x3 56x3 56x3 56x3 56x3 56x3 56x3 56	

			Gen	eral		Tire	Size				E	ngine								Fuel	m	Syste	
Make, Model and Capacity	Chassis Price	Standard W.B.	Max. W.B. Furnished	Gross Vehicle Wt. (See Key Note)	Chassis Wt. (Stripped)	Front	Rear	Make and Model	Number of Cylinders Bore and Stroke	Piston Displacement	N.A.C.C. Rated H.P.	Max, Brake H.P. at Specified R.P.M.	Valve Arrangement		Dia. Main Bearings	Length Main Bearings	No. Main Bearings	Oiling System	Governor Make	Carburetor Make	pe	Ignition System Make	Make
2 Ton—Cont Hug 66 Hug 66 Indiana 124 Indiana 124 Indiana 144 Indiana 144 Indiana 141 Indiana 111X Int Harv'tr 8D-4 Int.	3 3 3 3 5 0 3 3 4 0 0 3 3 4 0 0 1 7 4 5 4 1 2 0 3 0 0 3 4 0 0 1 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	118 130 156 157 120 117 117 117 117 140 155 140 146 146 146 146 162 161 162 162 161 162 162 162 163	170 188 120 117 117 117 118 118 118 118 118 118 118	12260 14150 12000 14000 12500 10000 10295 10355 13074	5700 5200 5035 5090 5035 3700 3700 5800 5800 5800 6055 6085	P 32x6 P 32x6 P 32x6 P 32x6 P 32x6 P 32x6 P 30x5 P 30x5 P 30x5	DP32x6 DP32x6 DP32x6 DP32x6 DP32x6 DP32x6 DP32x6 P 32x6 P 32x6 P 32x6 DP32x6 DP32x6 DP32x6 DP32x6 DP32x6 DP32x6 DP36x5 DP36x5 DP36x5 DP36x5 DP36x6 DP36x6 DP36x6 DP36x6 DP36x6 DP36x6 DP36x6 DP36x6 DP36x6 DP32x6	Bud WTU Bud HS6 Con 30B Con 30B Wis Y Her OX Lye CX Lye 4SL Her WXC Bud Own AB Con 16C Her OX Own XA Own FA6 Bud DW6 Own Own Own Con 16C	4-3 1/4 X 4 1/6 6-3 1/4 X 1/6 6-3	226. 4 241. 6 3 3 311 268. 3 3221. 5 224 224 6 3 2224 5 224 6 3 2224 5 224 6 3 2224 6 3 2224 6 3 2224 6 2224 6 3 2224 6 2224 6 3 2224 6 2224 6 2224 6 2224 6 2224 6 2224 6 2224 6 2224 6 2224 6 2224 8 2224 6 2224 8 2248 241 1 3 311 2 260 224 3 31 1 3 3 1 1 1 3 3 3 1 1 1 3 3 3 1 1 3 3 3 1 1 3 3 3 1 1 3 3 3 3 1 1 3	22 5 3 38 4 27 3 6 5 5 5 5 5 3 3 5 3 7 3 25 5 3 3 3 3 7 3 25 5 3 3 3 3 7 3 2 5 5 3 3 3 3 7 3 2 5 5 3 3 3 3 7 3 2 5 5 3 3 3 3 3 7 3 2 5 5 3 3 3 3 3 7 3 2 5 5 3 3 3 3 3 7 3 2 5 5 3 3 3 3 3 7 3 2 5 5 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	37-1850 57-2200 73-2400 73-2400 66-2400 66-2800 61-2800 66-2800 61-2756 61-2756 61-2756 61-2752 61-275	LUHHHULLULLULLULLULTLULLULLULLULLULLULLULLUL	CONNCCCCCCC CCC CC AAA CC ACCSCCCCC	22222222222222222222222222222222222222	7 情情 13 表 1	311111111111111111111111111111111111111	PC P	BUU BNO KKP NOO NOO NOO NOO NOO NOO NOO NOO NOO NO	Zen Zen Str Str Str Str Zen Zen	V EA A A MA A A C G E E V V A A A M A A C G E E V V A A D D D V V A A D D C G R R A A C P E D V V A A C E V V V A C E E V V V A C E E V V V A C E E V V V A C E E V V V A C E E V V V A C E E V V V A C E E V V V A C E E V V V A C E E V V V A C E E V V V A C E E V V V A C E E V V V A C E E V V V V V V E E E V V V V V V V V	SLLL AANNIE III AAAA III AANNIE III AANNIE III AAAA III AANNIE III AAAAA III AANNIE III AAAAA III AAAAA III AAAAA III AAAAAA	RRLLLL on Good Service Control of
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	Clutch	Gear	s	et		No.	Re	ar A	xle			Front Axle	Bro	ikes			Frame		Body	Mour	ting	Sp	eings	_
Radiator Make	Type and Make	Make and Model	Location	No. of Forward Speeds	Aux. Locat. and Speeds	Universals Make and P	Make and Model	Final Drive and Type	Drive and Torque		Reduc. in Low	Make and Model	Service	Area Service Brakes	Hand	Steering Gear Make	Dim. Side Rail	Type	Cab to Rear of Frame	Cab to Rear Axle	Width of Frame	Front	Rear	Auxiliary Type
You You G&O	D.B-L D.B-L D.B-L D.B-L D.B-L D.B-L P.B-B P.Own D.B-L	B-L 51 B-L 51 B-L 51 B-L 35 B-	AUUUUUUUUUUUUUUUUUU	444444544444444444444444444444444444444	No No No No No No No No	Bio 2 Bio 2 Bio 2 Spi 3 Spi 3 Spi 3 Spi 3 Spi 3 Spi 3 SP 3 SP 3 SP 3 SP 3 SP 3 SP 3 SP 3 SP	Eat 2002 Tim 56001 H	22FFF 1/2/2/2/2/2/2/2/2/2/2/2/2/2/2/2/2/2/2/2	HHRRHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH	6 92 56 66 6 577 7 7 8 8 5 5 6 6 7 7 7 7 6 6 3 8 5 6 6 6 7 6 7 7 7 6 6 3 8 5 6 6 6 7 6 7 6 7 7 7 6 6 3 8 5 6 6 6 7 6 7 6 7 6 7 7 7 6 6 7 8 7 7 7 7	37 0 33 34 2 2 40 6 6 47 8 33 0 0 5 3 37 6 3 37 6 3 37 6 37 6 6 37 6 6 37 6 6 2 3 3 3 4 8 2 9 9 3 3 4 8 2 9 9 3 3 4 8 2 9 9 3 3 4 8 2 9 9 3 3 4 8 2 9 9 3 4 4 4 4 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	Tim 12703H Eat Eat Shu 510 Tim 14703 m Own AB	W2IM W2IM L41H L41HV B4IM R2IM BE4IM BE4IM BE4IM BE4IM BE4IM BE4IM L41H L41H L41H W2IM  L41H L41H W2IM  L41H L41H L41H L41H L41H L41H L41H L41	400 270 421 421 378 421 577 448 2275 2250 289 289 289 289 289 289	TX CD TI TX 21 21 21 TD TX TX TX TX TX	Ros	8x2 ¼ x ¼ 7 ½ x3x ¼ 6x2x ¼ 6x2 ¼ x ¼	00000 : : 0: 0000 : : : : : 000 : : : :	108 108 108 108 108 50   42 42 42 42 42 41 104 116 116 135 135 14 144 144 133 144 111 117 117 117 118 118 118 118 118 118	413 38 34 38 38 38 38 38 38 38 38 38 38 38 38 38	34 34 34 34 33 34 33 33 40 40 40 40 40 40 33 32 32 32 32 32 32 32 32 32 32 32 32	38 \( \frac{1}{2} \times 2 \) 41 \( \frac{1}{2} \times 2 \) 41 \( \frac{1}{2} \times 2 \) 40 \( \frac{1}{2} \) 42 \( \frac{1}{2} \) 40 \( \frac{1}{2} \) 41 \( \frac{1}{2} \) 42 \( \frac{1}{2} \) 43 \( \frac{1}{2} \) 43 \( \frac{1}{2} \) 44 \( \frac{1}{2} \) 45 \( \frac{1}{2} \) 46 \( \frac{1}{2} \) 47 \( \frac{1}{2} \) 47 \( \frac{1}{2} \) 48	37 14 x2 1/2 50 x2 1/4 x3 50 x3 47 1/4 x3 50 x3	MARKANAN TAKE AND AND A STREET
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			Ger	eral		Tire	Size				E	ngine								tem		trical tem	
Make, Model and Capacity	Chassis Price	Standard W.B.	Max. W.B. Furnished	Gross Vehicle Wt. (See Key Note)	Chassis Wt. (Stripped)	Front	Rear	Make and Model	Number of Cylinders Bore and Stroke	Piston Displacement	N.A.C.C. Rated M.P.	Max. Brake H.P. at Specified R.P.M.	Valve Arrangement	Piston Material	×	Length Main Bearings	-		Carburetor Make		177	Generator, Starter Make	
2 <sup>1</sup> / <sub>2</sub> Ton—Col Service 4 Service 6 Stewart 183 Stewart 232 Studebaker 7 Studebaker 8 Wh te 51/ <sub>4</sub> Witchita 6-6 Witt-Will R2 Witt-Will R	0 3240 0 4580 2690 1990 7 2895 8 3295 A 3750 0 3750 B 2900	168 175 165 165 158 184 170 165	192 220 220 190 Op	12135 12500 12500 17000 14000 12500 12500	7000 5806 5100 4750 4920 6250 6200 5800	P 36x6 P 36x5 P 32x6 P 32x6 B7.00/20 B7.50/20 S 36x5° P 34x7 P 32x6 P 32x6	DP36x6 DP36x6 DP32x6 DP32x6 DB 7.00/20 DB 7.50/20 8 36x8° DP34x7 DP32x6 DP32x6	Bud D86 Bud BUS Lyc TF Lyc ASA Own Own Own Own GRB Wau 6ML Con 16R	6-3%x5 6-4x5 \( \)6-3\%x4 \( \)5-3\%x4 \( \)8-3\\ \)x4 \( \)8-3\\ \)x4 \( \)6-4x4 \( \)6-4x4 \( \)6-4x4 \( \)6-4x4 \( \)6-4x4 \( \)6	309 .6 386 .4 310 .0 278 .0 337 .0 337 .0 3358 311 311	31.5 38.4 31.5 31.5 39.2 39.2 39.2 39.2 38.4 38.4	73-2000 $85-2750$ $80-2500$ $115-3200$ $115-3200$ $56-1800$ $77-2200$	LLC	CC	2 3/4 2 5/8 2 5/8 2 5/8 2 1/4 2 5/8 2 2 3/4 2 3/4	10 9 14 9 14 11 34 12 32 11 14 11 14	PP 4 PP 5 PP 5 PP 7 PF 7 PF 7 PF 7 PF 7 PF 7	C BP S NO	Zen Str Str Str Str Str Str Str Str Str	V V V M V V M	A-L A-L D-R D-R D-R D-R D-R	A-L A-L D-R D-R D-R L-NI D-R L-D-R	
3 Ton  Amer, La France, 122  Am. La France, 122  Autocar, 1, 1  Autocar, 3, 1  Autocar, 3, 1  Autocar, 3, 1  Available, 7-39, 7-40  Available, 7-44  Available, 7-44  Brockway, 19  Brockway, 19  Brockway, 19  Brockway, 19  Chicago, 3, 1  Chicago, 3, 1	11 2600 1 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2	Opport	Op 199 199 203 203 Op Op Op Op Op Op Op Op Op Op Op Op Op	16,290 12850 16040 19000 19000 19000 19000 19000 19000 19500 15175 16600 17200 14900 17200 14900 12250 12250 12250 12250 12250 12250 12250 12250 12250 12250 12250 12250 12250 12250 12250 1250 1	7500 7500 7500 7500 7500 7500 7500 7500	P 36x6 P 34x7 P 34x7 P 34x7 P 34x7 P 36x6 P 36x6 D P 36x7 P 34x7	DP 34x7 DP34x7 DP36x8 DP34x7 DP32x6 DP34x7 DP38x7 DP38x7 DP36x4° DP36x8 DP36x8 DP36x8 DP34x7 DP34x7 DP34x7 DP34x7 DP36x5	Own 2R Own Own Own Own Own Own Own Wau KU Wau KRL Wau SRL Wau SRL Wau SRL Wau SRL Wau SRL Oon 33B Con 33B Con 38B Con 16R Con 16R Con 16R Con 16R Con 16R Con 16R Own	4	340 . 411 .	0 40. 8 37 7 9 40. 8 1 8 1 8 1 8 1 8 1 8 1 8 1 8 1 8 1 8	75-1800 75-1800 66-2200 86-2200 86-2200 86-2200 89-2000 89-2000 89-2000 89-2000 89-2000 87-2000 87-2000 89-2400 88-2200 78-2000 78-2400 772-2400 772-2400 773-2100 770-2100	HILLULLHHHHHLLLLLLLLLLLLLLLLHHLLLLLHLLLLHLLLL	N. 1000000000000000000000000000000000000	2	9 9 1111111111111111111111111111111111	444 777777777777777777744344777477443444777444437334444777777	COPPRESENTATION OF THE REPORT OF THE PROCESS OF THE	u Zenu Zenu Zenu Zenu Zenu Zenu Zenu Zen	VVVVGGVVVVVVVVVVVVVVVVVVVVVVVVVVVVVVVV	D. R. R. R. L.	DORRALNINGEEEEELLARRRRRR BELLRRRRRR BELLRRRRRR BELLRRRRRR BLLLLRLLLLLLLLLL	00

	Clutch	Gear	S	et		No.	R	ear A	ale		1	Front Axle	Br	akes			Frame	Boo	dy Mo	untin	S	prings	
Radiator Make	Type and Make	Make and Model	Location	No. of Forward Speeds	Aux. Locat. and Speeds	Universals Make and h	Make and Model	Final Drive and Type	Drive and Torque	Ra Hgh ui .3	Reduc. in Low	Make and Model	Service	Area Service Brakes	Hand	Steering Gear Make	Dim. Side Reil	Type Cab to Rear of	ame	1 0		Rest	- Anvillage Type
Lon Lon Own Mod Lon Own Mod Per Per	D.B-L D.Ful D.Ful D.Lon D.Lon P.Own D.B-L D.B-L D.B-L	B-L 35 B-L 51 Ful Ful Ful OwnGRBA B-L 51 B-L 35 B-L 35	מממממממממ	4 4 4 4 5	No No No No No No No No	Blo Blo Spi 3 Spi 3 Spi Spi Spi Spi Spi Spi Spi	Tim 63702 Ti' 65706D H Tim Cla Eat Eat Own 51A Own 30R Tim 56901H Tim 63702H	WF WF SF SW SW BF WF	RRHHRHH	8.5 7.25 7.25 5.11 5.11 7.14 4.8 5.3	63.0 47.5 47.6 24.6 24.6 35.6 38.7 28.3	Shu 5550 Tim 14703H	B4IM B4IMV B4IMV O2IMV C2IMV L4IHV L4IHV	444 444 331 342	TX TX TD TD FX RI TX	Han Han Ros Ros Ros Ros Own Ros Ros Ros	7 ½ x2 ½ x ½ (7 ½ x2 ½ x ½ x ½ x ½ x ½ x ½ x ½ x ½ x ½	144 156 137 A 117 A 143 A 145 A 145 A	90 97 3 80 3 80 3 65 3 91 9 84 8 78 5 76	32 32 41 41 34 30 32 32 32	40x3 38x2 ¼ 38x2 ¼ 38x2 ¼ 40 ½ x2 ¼ 41x2 ¼ 41x2 ½ 41x2 ½	56x3 50x3 56 % x3 56 % x3 56 % x3 54 x3 54x3 54x3	XZZZXZ
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Make, Model and Capacity	,	Chassis Price	lard W	Max. W.B. Furnished	Gross Vehicle Wt. (See Key Note)	Chassis Wt. (Stripped)	Front	Rear	Make and Model	Number of Cylinders Bore and Stroke	Piston Displacement	N.A.C.C. Rated H.P.	Max. Brake H.P. at Specified R.P.M.		Piston Material	Dia. Main Bearings	Length Main Bearings	No. Main Bearings	Oiling System	Governor Make	3	Fuel Feed	Ignition System Make	Generator, Starter Make	Line Number
3 Ton—Co Selden Service Sterling DW13 Stewart Ward La Franc Ward La Franc Ward La Franc Ward La Franc White-White Witt-Will	.47CB .60 6-65XK .33X e 25R e .25B	1680 3290 2975 3150	On 6	92 64 35 205 206	15500 13000 13000 12000 22000 15500 15500	7100 5500 6450 6000 6000 7535 6500	P 34x7	DP38x7 S 34x7 DP34x7	Wau 6ML Own Wis Z	6-3%x5 6-4x4%	339 . 3 386 . 4 298 . 0 354 . 0 358 477 . 0 326 . 3 339 . 2	38.4 33.7 36.2 38.4	85-2400 73-2000 66-2400 90-2750 77-2200 100-2400 56-1800 82-2400 82-2400	HLLLLL	. ACC	23/4 25/8 25/8	12½ 10 12½ 10¼ 11¾ 13♣	7 4 7 4 3	FP PC FP PS FP FP FP FP	Bu Wa Ha Ha No On	Str Zen Zen Str Str Str Str	VVVV	A-L D-R D-R D-R L-N	D-R A-L L-N D-R D-R L-N L-N1 D-R D-R	1
3½ Ton  Amer. La Franc  Amer. La Franc  Autocar.  Brockway.  Chicago.  Clinton.  ColemanD-40X.  Commerce.  Concord.  Corbitt.  Corbitt.	HSS HSS HSS TAA T45 1945 1945 1945 195 195 195 195 195 195 195 195 195 19	3740 5250 4400 5250 5500 5120 5250	1141 1192 1170 1170 1170 1170 1190 1190 1190 1190	203 242 203 242 200 0p 224 0p 184 192 222 223 202 4 230 192 206 144 230 180 192 205 192 206 192 206 192 206 192 206 192 207 184 192 207 184 207 207 207 207 207 207 207 207 207 207	19030 19400 19400 19400 19400 19400 19030 16720 19030 18000	8100 6900 6900 8900 6900 8900 6900 8900 6900 8900 8	S 36x5 S 36x5 S 36x5 S 36x5 S 36x5 S 36x5 S 36x4 S 36x5 S	DP38x7 DB8,25/2	Own 6	4-4 \( \) \(	350. 404.404.404.404.404.404.404.404.404.4	1 38 4 4 8 8 0 40 8 8 0 40 8 8 4 4 45 9 9 0 38 4 4 45 5 4 5 1 4 5 1 4 5 1 6 1 6 1 6 1 6 1 6 1 6 1 6 1 6 1 6 1	45-1456 90-2000 90-2000 100-2000 185-2400 100-2000 174-2400 85-2400 85-2400 85-2400 85-2400 85-2400 85-2400 85-2400 85-2400 85-2400 102-240 87-210 81-240 102-240 172-250 176-250 176-250 176-250 176-250 177-251 177-	LLLLLLLLHHHLLLLLLLLLLLLLLLLLLLLLLLLLLL	20000000000000000000000000000000000000	2553522 222222 232222 23222 2232222 2232222 2232222 223222 2232222 223222 223222 223222 2232 22322 2232 2232 22322 2232	137 97 97 10 10 113 133 10 113 113 113 113 113 11	277477 4444 73774744 44444 14444	PSSFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF	On Bu Bf Ha Ha Wa Wa Wa Bu Ha No No No No No Ha	Str Str Str Zen Zen Zen Zen Str Str Str Str Str	VVGGQVVMMGVVVVVVVVVVVEVVMMGVVVVVMGVGVVVVVGGGMPVVVVVVMVPPPVVV	A-Bo RR-Bo R	D-R A-L L D-R B NE B N	
4 Ton Armleder. Armleder. Atterbury. Available. Brockway Brockway Chicago. Corbitt.	R 22 400 9 90 8 8 18W 6 4-5 To 80 44 4 6 7 AB 4-5 7 AB 4-7 AB 4-	TO 0 480 480 533 66 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	17: 17: 17: 17: 17: 17: 17: 17: 19: 19: 19: 19: 19: 19: 19: 19: 19: 19	5 20 0 22 0 0 0 0 0 0 0 0 0 0 0 0	0 2000 4 2200 p p 1955 p 2155 22 22 22 22 22 22 22 23 22 25 23 25 24 25 25 25 26 21 22 25 23 25 24 25 24 25 24 25 24 25 25 25 26 21 27 25 28 25 29 21 20 20 21 20 20 21 20 2	00 930 0 788 0 810 0 82 100 80 60 80 0 80 80 80 92 90 92 90 93 90 83 90 83 80 8	00 P 94x7 00 P 36x8 00 P 36x8 00 P 36x8 00 S 36x6 00 S 36x6 00 P 40x8 75 S 36x6 00 P 40x8 75 S 36x6 00 P 36x8	D840x7 DP34x7 S 36x12' S 36x12' D836x5 DP36x8 DP36x8 DP36x8 S 36x12 S 36x12 DP36x8 DP36x8 DP36x8 DP36x8 DP36x8 DP36x8 DP36x8 DP36x8 DP36x8	Con 34B Wau EU Bud YTU Bud YTU Bud BA 6 Con 20R Con 20R Con 20R Con 18R Con 20R Con 18R Con 20R Con 18R Bud BA 6 Bud BA 6 Bud BA 6 Bud BA 6 Con 21R Bud BA 6 Con 21R Bud BA 6 Con 21R Bud BA 6 Con 18R Con 20R Con 18R Con 18R Con 20R Con 18R Con	6-4   \$ 2	3813813813813813813813813813813813813813	32 32 32 32 32 32 32 32 32 32 32 32 32 3	9 94-22 4 54-11 6 100-26 9 89-2: 8 90-2: 8 90-2: 8 90-2: 8 90-2: 4 81-2: 9 102-2: 8 8: 7 94-2: 4 82-2: 4 82-2: 4 82-2: 4 83-2: 4 83-2: 4 84-2: 4 85-2: 4 85-2: 4 85-2: 4 85-2: 4 85-2: 4 85-2: 4 85-2: 4 85-2: 4 85-2: 9 94-2:	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	CO : GCCCCCCC : G : CCCCCCCCC : GCCCCCCCCC	CC 233 CC 222 CC	4 F 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	%% · · · · · · · · · · · · · · · · · ·	77777777777777777777777777777777777777	WEEKER WE	Zen   Zen		A-L A A A A A A A A A A A A A A A A A A	L T A-I-I A-	RNNI LRR RRRR RRRR BLRRLLLLLLLLRR LLRELRL

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		Clutch	Gear	S	et		No.	Re	ar A	xle			Front Axle	Bra	kes			Frame		Body	Mou	nting	Sp	rings	
ne Number	Radiator Make	Type and Make	Make and Model	Location	No. of Forward Speeds	Aux. Locat. and Speeds	Universals Make and P	Make and Model	Final Drive and Type	Drive and Torque		Reduc, in Low	Make and Model	Service	Area Service Brakes	Hand	Steering Gear Make	Dim. Side Rail	Type	Cab to Rear of Frame	Cab to Rear Axle	Width of Frame	Front	Rear	Auxiliary Type
1 Ov 2 Lo 3 Ho 4 Mo 5 Mo 6 Mo 7 Mo 8 Ov 9 Pe 10 Pe	ex od od od od od	D.B-L D.B-L D.Ful P.B-L D.Ful P.B-L D.Ful P.Own D.B-L D.B-L	B-L B-L 51 B-L 51 Ful B-L 314 B-L 314 Ful Own 4B B-L 51 B-L 51	מטטטטטטטטטט	5 4 4 4	No Opt Opt	Blo Blo Spi Spi 3 Cle Cle Own 2 Spi Spi Spi	Tim Tim65706DH Wis 8317L Tim Tim Tim Own Own Tim 58000H Tim 65001H	SF WF WF SF SF WF 2F BF WF	RURH	6.16 6.16 Opt 7.6 6.83	40.6 40.6 Opt 49.7	Tim Own	LAIH BAIM LAIHV LAIHV OPIM LAIHV LAIHV	398	TX TX TX TX	Ros Han Han Ros Ros Ros Own Ros Ros	6x2x ¼ 9x2 ¼ x ¼ 12x3x ¼ 12x3x ½ 16x2 ½ x ¼ 8 ¼ x 3 ½ x ¼ 7x2 ½ x ¼ 7x2 ½ x ¼	16.2	132 156 122 4 136 4 Opt 168 Opt 146 4	84 97 ½ 72 ¼ 79 ½ Opt 108 Opt 91 ½ 76 76	33	48x3 40x3 40x2 ½ 40x2 ½ 40x2 ½ 41x2 ½ 41x2 ½	54x3 56x3 52x3 60x3 60x3 56x3 54x3 54x3	KZKKKK.
14 Ow 16 Ow 16 Ow 17 Yc 18 Gd 20 Ch 22 Ch 23 Ch 24 Ch 24 Ch 25 Ch 26 Ch 26 Ch 26 Ch 26 Ch 26 Ch 26 Ch 26 Ch 27 Ch 27 Ch 28	is de de la company de la comp	D.Own D.Own D.Own D.Own D.Own D.Own D.B-L	Own 2R Own 2R Own 2R Own 2R Own 2R Own 2R Own 3H Own T Den 55 B-L 554 B-L 554 B-L 55 Max B-L 60 Max B-L 51 B-L 51 B-L 55 D-L 55 B-L 55 B-L 55 B-L 55 D-L 60 B-L 60 B-L 60 B-L 60 B-L 60 B-L 60 B-L 51 B-L 60 B-L 51	A A A U U U U U U U U U U U U U U U U U	744874444444444444444444444444444444444	No N	Blo Blo Spi 2 Spi 3 Spi Own Cle Cle	Own 2R Own 2R Own 2R Tim 65706BY Own J Own C-TE Own J Own C-TE Own J Tim 65704 Wis 1237H Tim 66704 Wis 1237H Tim 66704 Tim 65706 H	22F 22F 22F 22F 22F 22F 22F 22F 22F 22F	HERMAN RH R RREARRE R BERRARE HE R RREEBIN H	7.57 6.88.87 8.87 6.88.87 6.88.53 6.10.00 7.88.33 6.10.00 7.88.35 9.10.00 7.78.33 9.10.00 7.78.33 9.10.00 7.78.33 9.10.00 9.00 9	40.66 (4.66	Tim 15730 H	O2IM O2IM O2IM O2IM O2IM O2IM O2IM O2IM	516 516 434 457 660 660 252 687 614 215 215 215 215 215 215 215 215 215 215	CD TD RI RI CD 41 TD FD FD TI TX TX TX TX TD TD	Ros	8x3x   4 9x3x   4 7   6x2   6x   6 7   6x3   6 9   6x3   6x   6 9x2   6x   6 9x2   6x   6 9x2   6x   6 9x2   6x   6 11x3x   6 7x3   6x   6 7x3   6 7x3	CCCCPTT TC C . PLCCCC P . LLCCTTTTT CC	Opt 144 144 132 144 132 144 132 144 132 144 132 144 133 156 156 156 156 156 131 144 136 136 136 136 136 136 136 136 136 136	101 9 89 9 104 105 105 105 199 76 9 97 9 94 9 94 9 94 9 95 9 91 9 78 9 91 9 78 9 91 9 78 9 91 9 78 9 91 9	34 1 34 34 34 34 34 34 34 34 34 34 34 34 34	48x3 38½x2½ 46x3 46x3 44x3 43x2½ 54x3 42½x2½ 40x2 41½x2½ 40x2½ 40x2½ 40x2½ 39x2½ 39x2½ 39x2½ 39x2½ 39x2½ 39x2½ 4x3 4x3 4x3 4x3 4x3 4x3 4x3 4x3 4x3	56x3 ½ 44x3 54x3 54x3 54x3 52x4 52¼ 42½ 54x3 54½ 30x3 30x3 30x3 30x3 54x4 58x4 58x4 58x4 56x3 54x4 56x3	KINGSTANSE. S. SK. SKENESKUZEK . S. SKENESKUZEK S. OK. SKENESKUZ
69 O Y. 71 Y. B. 72 B. 72 B. 72 B. 73 B. 75 C. 77 C. L. 77 P. L. 7	ou us us us de	D.Ful D.B-L. D.B	B-L 60 Max B-L 55&60 Ful H B-L B-L 60 Max B-L 55 Own AL B-L 35 Own WC Cov S HO	A A A A A A A A A A A A A A A A A A A	AAJAAAAUUUU AAAAAUAUAUAUUAAUAAUAAAU	14 NOO 10 10 10 10 10 10 10 10 10 10 10 10 10	Spi	Tim 58000 Tim 65706D Tim 66702D Tim 66700 Tim 66701 Tim 67001 Tim	WHEN WE	RHER HE HERELLERELLERE TO THE FEBRUARY OF THE PROPERTY OF THE	9	90 46.40 10 144.41 13 13 13 145.46 16 16 16 16 16 16 16 16 16 1	Own Own 2 Tim 15733H Tim 15733H Own	LATHY LAIHV LAIHV LAIHV LAIHV LAIHV LAIHV  BAIM OPM OPM LAIHV TZIM TZIM	233 233 544 724 427 899 922 666 666 799 1	TTX TTX TTX TTX TTX TTX TTX TTX TTX TTX	ROS	9x3 ½ x h 8½ x3 ½ x h 7½ x3x ¼ 7½ x3x ¼ 7x3 ½ x ¼ 7x3 x h 7x3 ½ x ¼ 7x3 ½ x ¼ 7x3 ½ x ¼ 7x3 ½ x ¼ 9 n x3 ½ x ¼	COCPCO P COTOPORO	177 176 1742 175 176 176 176 176 176 176 176 176 176 176	84 84 84 86 99 99 80 102	36 36 36 38 38 38 38 38 38 38 38 38 38 38 38 38	43 ½ x3 43 ½ x3 46 x3 45 ¼ x2 44 x3 44 x3 44 x3 42 x2 43 x2 43 x2 45 x2	60x3 3/6 60x3 3/6 60x3 3/6 46x3 3/5 54x3 54x3 54x3 54x3 54x3 55x3 3/6 56x3 56x3 3/6 56x3 3/6	NAME OF STATE OF STATES AND STATES OF STATES O

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Time is a more	Make, Model and Capacity	Chassis Price	Standard W.B.	Max. W.B. Furnished	Gross Vehicle Wt. (See Key Note)	Chassis Wt. (Stripped)	Front	Rear	Make and Model	Number of Cylinders Bore and Stroke	Piston Displacement	N.A.C.C. Rated H.P.	Max, Brake H.P. at Specified R.P.M.	But	Camshaft Drive	ain Be	Length Main Bearings	No. Main Bearings	Oiling System	Governor Make	Carburetor Make	Fuel Feed	Ignition System Make	Generator, Starter Make	Line Number
1 Sc 2 Se 3 Se 4 St 5 W	Ton—Cont' hacht. De Luxe 30 iden. 47 CD rvice. 47 CD rvice. Wils-64KS ard La France 35R. ard La France 4E6. itt-will. R4X	5330	151 175 166 Op	199 184 192 180 Op Op	18000 21000 21000 21600 21600	7600 8400 6850 8100 8100	P 36x8 8 36x6 8 36x5 B9.00/20	DB 9.00/20 DP36x8 8 36x14 8 36x10 DB9.00/20 DB9.00/20 DB9.00/20 DP36x8 DP36x8	Con 18R	6-4x435	339 339 411 358 462 462 381 427	38.4 38.4 40.8 38.4 45.9 45.9 40.8 45.9	73-2200 90-2400 71-2000	LL	0.000	2%	131/4 10 131/4 131/4 131/4 131/4	7 44 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	PC	No Bu Wa Wa Wa	Zen Str Zen Zen Str Str Zen Zen	VPPV	A-L D-R A-L D-R D-R D-R D-R	A-L D-R A-L L-N D-R D-R D-R	1 2 3 4 5 6 7 8
9 St	1/2 Ton terling. DC19-64XK yard La France 45D.				23000	6500 8600	S 36x5 P 36x8	S 36x10 DP36x8	Wau 6XK Wau SRL	6-3%x4% 6-4%x5%	462	33.7 45.9	97-2000	L	G C	3	13%	7 1	FP	Wa Wa	Zen Str	VP	D-R	L-N D-R	9 10
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72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88	5½ Ton and Amer LaFrance. Z61 Autocar F745 To Autocar F755 To Autocar F755 To Brockway. 290-715 To Brockway. 640-6 W Chicago. 64 Chicago. 64 Chicago. 46 Chicago. 47 Chicago.	575 2 600 n 680 n 900 n h h l C D D D D D D D D D D D D D D D D D D D	000000000000000000000000000000000000000	69 Oi 73 Oi p 16 p 17 76 Oi 72 Oi 44 14 75 95 23 75 21	3 3 5 5 2700 8 3200 0 3600	0 1300 0 1075 0 1400 1017 1300 880 0 1300 0 1375 0 1375 0 1376 0 1376 0 1376 0 1376 0 1376 0 1376 0 1376 0 1207 1000 1207 1200 1200 1200 1200 1200	0 8 36x7 0 8 36x7 0 8 36x7 0 8 36x7 0 8 36x7 0 8 36x7 0 9 38x7 5 8 36x6 0 9 38x7 5 8 36x6 0 9 38x7 5 8 36x6 0 9 36x8 0 9 36x6 0 9 36	DF30x8 S 36x12 DP36x6 DP36x6 S 40x14 DF40x8 DP38x9 DP38x9 DP38x9 DP38x9 DP38x9 DP36x8 S 40x14	Own 5R Own 5R Own 5R Own 5R Own Con 36B Wau EU Wau EU Wau KU Wau KU Wau KU Wau KU Wau KB Bud BA6 Con 21R Bud BA6 Con 21R Bud GL 6 Bud BA6	4-5x6 x 4-6 x 4-7 x 5-6 x 5-6 x 5-7 x 5-7 x 5-6 x 5-7	510 779 411 427 479 675 4549 471 471 471 471 404 404 331	40 43 48 48 48 540 40 45 45 48 40 45 48 48 40 45 48 48 48 40 40 40 40 40 40 40 40 40 40	3 6 6 7 6 7 6 6 7 6 7 6 7 7 9 4 - 25 0 0 6 1 - 140 0 1 1 177 - 228 8 83 - 200 9 12 - 246 10 - 200 6 1 - 133 - 200 6 1 1 - 228 8 83 - 200 6 1 1 - 228 8 83 - 200 6 1 1 - 200 6	00 L C C C C C C C C C C C C C C C C C C		C 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	12 13 9 15 13 11 11 10 10 10 10 9 9 13 9 8	1000 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	PS P	Bu Bu Bu Wa Bu Ha Pe Ha Pe Ha Pe	Str Str Zen	E E C C C C C C C C C C C C C C C C C C	L-N Apo A-L	A-L A-L A-L A-L D-F N-E A-L D-I D-I D-I D-I D-I D-I D-I D-I D-I D-I	1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2

		Clutch	Gear	8	et		No.	R	ear A	xle			Front Axle	Bri	nkes			Frame		Body	Mou	ntin	Sp	rings		
Line Number	Radiator Make	Type and Make	Make and Model	Location	No. of Forward Speeds	Aux. Locat. and Speeds	Universals Make and	Make and Model	Final Drive and Type	Drive and Torque	Ra daiH ni .a	Reduc, in Low	Make and Model	Service	Area Service Brakes	Hand	Steering Gear Make	Dim. Side Rail	Type	Cab to Rear of Frame	Cab to Rear Axle	Width of Frame	Front	Rear	Auxiliary Type	Line Number
234567	You Own Lon Hex Own Own Per	D.Ful D.B-L D.Own D.B-L P.B-L P.B-L D.B-L D.B-L	Ful MG U B-L 51 B-L 60 Max B-L 55 B-L B-L B-L 55 B-L 55	UAAUU	574	No Op Opt Opt No No	Spi Spi Blo Spi Spi Spi Spi Spi	Wis 8837AL Wis 1237H Tim66700DP Tim 65704 Tim Tim 5706H Tim 65706H	2F 2F WF WF WF WF	RRR	10.3 8.5 Opt Opt 7.25	98.2 85.5 Opt Opt 38.8	Shu 5572 Tim 16302 Tim 15300 Tim 5500 Tim 5733H Tim 15733H	02IM L4IHV T2IMV L4IHV L4IHV	500	TD TX TX TX CD CD	Ros Ros Ros Ros Ros Ros Ros	7x2x14 7x31/4x # 7x31/4x # 7x21/4x14		Opt 108 144 147 Opt Opt	71 9434 86	31 1/4 34 33 33 32 32	40x2 \\\ 48x3 \\ 40x2 \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	54x3 54x3 54x3 54x3 54x3 54x3	KKKKKK K	
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For the Key of Abbreviations turn to page 80, please

	Clutch	Gear	Set		.0	Re	ar A	xle			Front Axie	Bra	kes			Frame		Body	Moun	ting	Spr	ings	
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#### KEY OF ABBREVIATIONS

#### KEYNOTE

Gross Vehicle Weight.—Chassis weight, plus body and cab, plus pay load.

#### TIRES

B-Balloon

P—High Pressure Pneumatics standard equipment.

DB—Dual Balloons standard equipment.

DP—Dual High Pressure Pneumatics standard equipment.

8-Solida

-Dual Solids

-Pneumatics furnished at extra cost.

#### **ENGINE** Make

Bud—Buda Company.

Con—Continental Motors Corp. Has—American Car & Fdy. Co. Her—Hercules Motor Corp.

Lye-Lycoming Motor Corp.

Wass—Waukesha Motor Co. Wiss—Wisconsin Motor Mfg. Co.

#### Valve Arrangement

H-In head. L-"L"-Head.

S—Sleeve. T-"T"—Head.

#### Camshaft Drive

C-Chain.

#### Piston Material

-Aluminum alloy.

B-Semi-steel.

C-Cast Iron.

-Aluminum alloy with strut

#### Oiling System

FP—Pressure to main, connecting rod, camshaft, bearings and piston pins.

PC-Pressure to crankshaft and con-necting rod bearings.

PG—Pump, gravity and splash.
PS—Pressure with splash.
SP—Circulating with splash

#### Governor

Bf-Bethlehem Fabricators, Inc.

Bu-Buda Co-Continental.

Ha-Handy Governor Co.

HS-Amer, Car & Fdy. Co.

KP-Handy Governor Co. Mo-Monarch.

No-Not supplied.

On-Own

Op-Optional.

Pe—Pierce Governor Co. Si—Simplex (Elsemann M mann Magneto Corp.)

Sterling.

Wa-Waukesha

#### Radiator

Bus-Bush Mfg. Co.

Chi-Chicago Mfg. Co. Fed-Fedders Mfg. Co. O&O-G & O Mfg. Co.

Har-Harrison Rad. Corp. Hex-Hexcel Rad. Co. Lon-Long Mfg. Company

McC—McCord Rad. & Mfg. Co. Mod—Modine Mfg. Co.

Per—Perfex Corp.
R-T—Rome-Turney Rad. Co.
You—Young Rad. Company.

#### **FUEL SYSTEM** Carburetor Mako

Car-Carter Carburetor Co.

Joh-Johnson. Mar-Marvel Carburetor Co.

Sch-Wheeler Schebler Co.

Ste-Detroit Lubricator. -Stromberg Motor Dev. Co.

Til-Tillotson Mfg. Co.

Zen-Zenith-Detroit Corp.

#### Fuel Feed

E-Electric Pump.

G-Gravity. M-Mechanical Pump

V-Vacuum.

#### **ELECTRICAL SYSTEMS**

#### Ignition System, Generator and Starter Make

A-Bo-Amer. Bosch Magneto Co.

R-Bo—Robert Bosch Magneto Co. Apo—Apollo Magneto Corp.

D-R-Delco Remy Company.

Eis—Eisemann Magneto Corp L-N—Leece-Neville Co.

N-E—North East Elec. Co.
Spi—Splitdorf Electrical Co.

Generator and Starter at extra cost.
 Starter not supplied. Generator at extra cost.

3-Starter at extra cost.

#### CLUTCH

#### Type and Make

D—Multiple disk.
O—Plate in oil.

-Single plate.

#### Make

B&B-Borg & Beck Co. B-L-Brown-Lipe Gear Co.

B-L—Brown-Lipe Gear Co.
Cla—Clark Equipment Co.
Cov—Covert Gear Co.
D-Q—Detroit Gear & Mach. Co.
Ful—Fuller & Sons Mfg. Co.
Lon—Long Mfg. Company.

M-E-Merchant & Evans.

M. M. — Mechanics Mach. Co.

Mun—Muncle Products Div.

General Motors Corp.

Roc—Rockford Drill Machine Co.

W-Q-Warner Gear Co.

#### GEARSET

#### Make and Model

B-L-Brown-Lipe Gear Co.

Cla-Clark Equipment Co.

Cov—Covert Gear Co.
D-G—Detroit Gear & Mach. Co.
Ful—Fuller & Sons Mfg. Co.

M.M.-Mechanics Mach. Co.

Mun-Muncie Products-Div. General Motors Corp. W-Q-Warner Gear Co.

War-Warner Corp.

#### Location

A—Amidships.

J—Unit with jackshaft.

U-Unit with engine.

#### Auxiliary, Location and Number of Speeds

No-Not furnished.

Op-Optional at extra cost.

-Amidships.
-Rear of amidships main transmission. U-Unit with engine.

#### UNIVERSAL JOINTS

Blo-Blood Bros. Mach. Co. B-C-Blood and Cleveland.

Cle-Cleveland Steel Prod. Corp.

Har—Spicer Mfg. Co. M.M.—Mechanics Machine Co.

PeS—Peters and Spicer. Pet—Peters. P-S-Peters and Snead.

S-C—Spicer and Cleveland. Spi—Spicer Mfg. Co.

S-P-Superior Universal Products Co.

SpB—Spicer and Blood Bros. SpP—Spicer and Pick.

U-M-Universal Machine Co. U-P-Universal Products Co.

#### REAR AXLE

#### Make

Cla-Clark Equip. Co.

Col-Columbia Axle Co.
Con-Continental Axle Co.

Eat—Eaton Axle Co. Sal—Salisbury Axle Co.

Tim-Timken Det. Axle Co.

#### Wis-Wisconsin Axle Co

Final Drive and Type B-Bevel.

C-Chain

D-Dead.

I-Internal Gear

2-Double Reduction. S-Spiral Bevel.

W-Worm.

1/4—Semi-Floating.
3/4—Three-Quarter Floating.

F-Full Floating.

Drive and Torque

H—Hotchkiss. R-Radius Rods.

T-Torque Arm.

U-Torque Tube. R-Radius Rods and Springs

O-Radius Rods Optional

#### FRONT AXLE

Make and Model Shu-Shuler Axle Co., Inc.

Cla—Clark Equipment Co. Col—Columbia Axle Co. Con-Continental Axle Co.

Eat—Eaton Axle Co. Sal—Salisbury Axle Co. She-Sheldon.

Tim-Timken Det. Axle Co. Wis-Wisconsin Axle Co.

#### **BRAKES**

#### Service

Make

-Bendix. BE—Bendix front, Eaton rear. BO—Bendix front, Own rear.

C-Columbia.

K-Clark.

L—Lockheed. LO—Lockheed front, Own rear. O—Own.

OE—Own front, Enton rear. OW—Own front, Wisconsin rear.

8-Steeldraulic.

T-Timken. W-Wisconsin.

#### Location

2—Two Wheel
4—Four Wheel
2/4—Two wheel brakes effective on all
four wheels through driveshaft.
J—Jackshaft.
J—Jackshaft.
P-Propellor shaft.
P/4—Propellor shaft
effective on fouwheels,
r—Four rear wheels.

#### Type

Internal.

-Internal front and external rear.

#### Method of Operation

Air. Hydaulic and mechanical. Hydraulic. Mechanical.

#### Hand

Location

-Center of double propellor shaft. Rear wheels. Four wheels. -Worm or bevel gear shaft. -Transmission

#### Type

External.
 Internal front and external rear

#### STEERING GEAR

Make

-Columbus G. & P. Co.
-Gemmer Mfg. Co.
-Hannum Mfg. Co.
-Saginaw Steering Gear
Div. General Motors Corp.
-Hannum Mfg. Co.
-Ross Gear & Tool Co.
-Wohlrab Gear Co.

FRAME Dimensions Side Rail Depth, Width of Flange, Thickness

of Stock

Type

#### Channel reinforced with plate. Side rails tapered front and rear. SPRINGS

Auxiliary Type 14-Semi-elliptic above or below main springs.
4—Quarter elliptic
C—Coil spring.

\* General Motors Truck Models shown are basic chassis in the ton-range classifications as advertised. Each model is available in a number of wheelbases and tire types (tire combinations—each type carrying a recommended gross weight) and priced accordingly. Gross vehicle weight indicated for each chassis in table is the recommended gross weight for type number specified without exceeding rated capacity of tires. The tire size does not affect the Straight Rating for which chassis is guaranteed and each Model is designed to operate satisfactorily under average conditions with loads giving a total gross weight (chassis, body, equipment and payload) equal to Straight Rating given below. Type numbers, Straight Rating and Payload Range, assuming nominal body allowance, for each model follow:

MODEL	STRAIGHT	TYPE NUMBERS	RANGE OF PAYLOAD (TONS)
T-11	3800 lbs.	1001	36
T-15	5400 lbs.	1501 to 1503	36
T-17	6500 lbs.	1701 to 1708	% to 1%
T-19	8500 lbs.	2201 to 2218	1 to 2
T-25	8500 lbs.	2501 to 2513	1 to 1%
T-30	11000 lbs.	3201 to 3214	11/4 to 21/4
T-42	14000 lbs.	4201 to 4212	2 to 314
T-44	15000 lbs.	4401 to 4412	2 to 4
T-60	18500 lbs.	6201 to 6218	21/4 to 41/4
T-82	22000 lbs.	8201 to 8212	3 to 6
T-90	28000 lbs.	9001 to 9007	5 to 734



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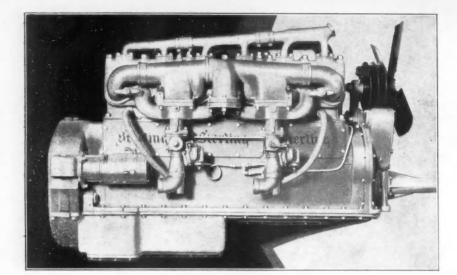
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A powerful, balanced engine built the way a truck engine should be built to improve service and add to operating revenue.

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REDUCE YOUR OVERLOAD

If you use the PETREL you can haul about twice as much pay load and haul it faster.

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MOTOR TRANSIT BUSES



PICKWICK NITE COACH



COLEMAN TRUCKS\_

Sterling engines have enviable records of achievements. First to make a mile a minute on the water — first straight eight (1910) — chosen for United States 75-foot Ocean Patrol boats (in service five years);—in over 1,000 cities Sterling engines guard the precious water supply against interruption (Sterlings have many times accepted continuous service at high speed for months)—with this great variety of important accomplishments and twenty-five years of manufacturing, principally fast, full-load engines, the present

PETREL truck engine has a natural advantage. The PETREL is designed with a knowledge of what truck duty requires: a speedy engine with the secondary forces balanced out.



Seven-bearing crankshaft, three-inch diameter, Chrome nickel molybdenum steel, fully counterweighted with twelve counterweights, each crank-throw balanced in its own plane, the only true dynamic balance. Rigidly anchored bearing caps, protecting bearing against side thrust (shims omitted) affords a construction permitting sustained heavy duty.



An unbalanced crankshaft travels around the bearing in contact, wiping off the oil film, resulting in rapid bearing wear and frequent adjustment.



The counterweighted, dynamically-balanced Petrel crankshaft spins true in the bearing surrounded by an unbroken film of oil. The Petrel crankshaft bearings may never need adjustment.

#### The Unmatchable Specifications, Condensed:

6 CYLINDERS 51/4-INCH BORE

TWIN CARBURETORS—Excellent distribution and economy. Achieving 5.4 M.P.G. in service.

CONNECTING ROD-121/2 inches long on centers, relieves side thrust, no oil pumping.

PISTON-Exclusive, patented, aluminum. Sterling design, skirt neither split nor detached from head.

PISTON PIN-1.4365 inches diameter, full floating, oiled from pressure system.

EXHAUST MANIFOLD-Hot-spot type, provision for expansion.

6-INCH STROKE WEIGHT-1800 POUNDS

COOLING SYSTEM-Large pump, equal distribution to all cylinders.

IGNITION-Two spark plugs per cylinder. Battery system, double distributor, twin breakers and heavy duty coils.

CAMSHAFT-Positive gear driven (no chains), pressure oiling.

CYLINDERS—Nickel iron—cast enbloc.

CYLINDER HEADS—Special L-head, for easy servicing, cast in pairs. Unnecessary to disconnect exhaust pipe or manifold for servicing.

Testing-15 hours.

GEAR DRIVES-Ball bearing mounted gear drives provided for 800-watt generator and 6-foot air compressor.

Power—A high speed, powerful engine that can produce 200 H.P. at 2000 R.P.M., modified, and compression reduced to 4.3 to 1 ratio. Full load without "pinging" at 800 to 2200 R.P.M. 170 H.P. plus.

the marine design of this famous engine is the selected power plant for the United States Coast Guard life boats and many famous motor boats.

> A Sterling-powered life boat removed the passengers and crew from the Admiral Benson aground at the





WHAT THE STERLING

# POTRIBLE

#### MEANS TO THE TRUCK OPERATOR

- 1. FASTER SCHEDULES
- 2. GREATER ROAD SPEED
- 3. Power for Hills
- 4. Less Gear Shifting
- 5. QUICKER ACCELERATION

- 6. EASY RUNNING
- 7. Less Maintenance
- 8. Lower Fuel Costs
- 9. LARGER LOADS
- 10. BETTER SERVICE
- 11. INCREASED REVENUE

Knowles Brothers selected the PETREL for their Coleman trucks because in their previous experience no engine was powerful enough for their work. 

The United States Army and the United States Coast Guard selected it, respectively, for trucks and life boats because, with a complete knowledge of available engines, it appealed to them as the best designed and the best constructed engine. Motor Transit tried out the PETREL and the performance justified adoption. Pickwick observed its operation, looked at the engine and the factory, and also chose it for the Nite Coach. Truck operators looking toward better truck operation are seeking to adopt the PETREL for replacement. From them is learned the increasing need of this remarkable engine.



Your maintenance costs are too high.

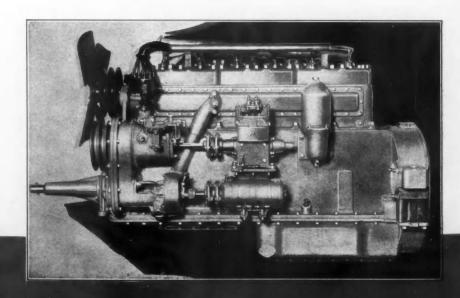
You would haul larger loads.

You will appreciate increased earnings.

#### -investigate the PETREL

Many truck companies, preferring to adopt an engine of pronounced accomplishments, will furnish the STERLING PETREL





# COLEMAN

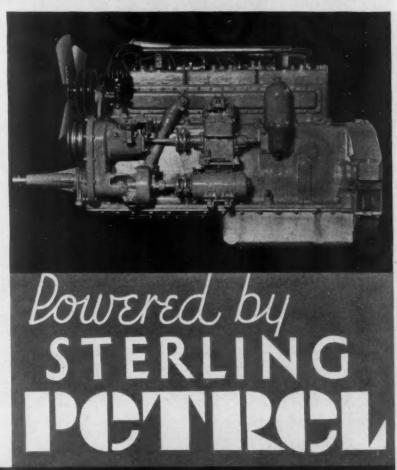
#### FOUR WHEEL DRIVE

The most powerful engine in the industry is now available in the country's sturdiest, most powerful truck.

Pictured below is the Coleman F-200, one of four delivered to Knowles Brothers for use on their contract with the Utah Power & Construction Company at Cascade, Idaho. These trucks haul trailers over mountain roads. Grades encountered are so steep that rear drive trucks are unable to make them.

Knowles Brothers, having been Coleman users for years, knew they could handle the contract profitably with Colemans—extra powerful Sterling Petrel plus Coleman's matchless four wheel performance.

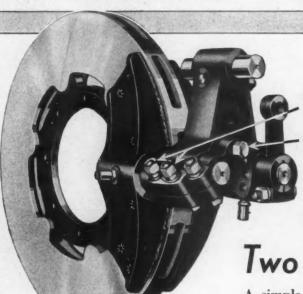
If you wish to sell the sturdiest truck built in America, you should have the Coleman franchise. Full specifications of the Coleman F-200 and details of the Coleman dealership will be sent to responsible dealers. Address your inquiry to either plant. Coleman Motors Corp., Main Plant, Littleton, Colo. Eastern Plant, Washington, D. C.





# TRU-STOP

A REAL EMERGENCY BRAKE THAT CAN BE ADJUSTED IN 2 MINUTES



1-loosen clamping bolts
2-remove locking bolt
and move adjusting lever
one hole

Two minutes to adjust

A simple adjustment that any ordinary driver can make in two minutes, takes up the natural lining wear . . . no equalization . . . entirely foolproof.

## Twenty minutes to reline

It is a simple matter to replace shoes on the road, in case of emergency. Your trucks or buses can carry shoes with brake linings riveted.

Moulded linings last a long time (depending of course upon the use), because TRU-STOP is self-ventilating—linings are kept cool.

These advantages . . . plus the fact that the Tru-Stop Brake is a real emergency brake as well as an efficient parking brake. An emergency brake that gives positive action at any speed.

For complete information address:

#### AMERICAN CABLE COMPANY, Inc.

Automotive Division
BRIDGEPORT, CONNECTICUT

3-111 General Motors Building, Detroit, Michigan

Consider these advantages . . .

Won't Grab
Positive Action
2 minutes to adjust
20 minutes to reline
Dissipates Heat
Interchangeable Parts

Standard make transmissions have provisions for mounting Tru-Stop Brakes. Insist on Tru-Stop Emergency Brake equipment for your new trucks and buses.



AN ALMOST UNBELIEVABLE INCREASE IN A MARKET

ROUTE COVERAGE.

These comparisons between route coverage with General Jumbo Balloons and former equipment show one important reason why operators everywhere are changing-over:

ON THE SAME JOB

## **Before**changing-over from Former Equipment

After
changing-over to the
GENERAL JUMBO
Truck Balloon

CALIFORNIA. Long haul, fast freight; truck and trailer; unable to maintain satisfactory average speed on high-pressures due to poor traction on part of run.

With Jumbo Balloons operator now averages much higher speeds, and saves 3 hours on each trip!

TEXAS. Bakery chain. Fast 200-mile daily trip on highpressures caused overheating and blowouts.

Now saves 2 hours per truck per day on General Balloons no overheating, no blowouts!

MASSACHUSETTS. Makes 2 daily trips between Providence, R. I., and Millbury, Mass. Originally equipped with solids.

On General Balloons operator finishes both trips I hour earlier every day. Has changedover his other trucks!

NEW ENGLAND. Hauls fuel oil, truck working 24 hours per day. On solids made only 4 round trips a day. Makes 5 round trips with Jumbo Balloons—a 25 per cent increase!

WEST COAST. Hay wholesaler; gross weight truck, 32,000 lbs.; average run 200 miles. With high-pressures had to keep speed down due to overheating.

Saves 3 hours per trip on General Balloons without overheating previously experienced?

OHIO. Moving van; runs up to 600 miles. High-pressures blew after short mileage. Poor traction, particularly in winter. With Jumbo Balloons have gone through winter months on ice and snow without slippage and no chains. Now averages 40 miles per hour, 9 ton load!

WISCONSIN. Truck operates at high speed, 6 to 7 ton loads. With solid tires had trouble maintaining speed due to slippage and base separation from overheating, etc. Operator says Jumbo Balloons have reduced his running time over 20 per cent, and have also outrun several high-pressure jobs owned by same company!

The General Jumbo Truck-Balloon will give you increased route coverage, too—because it is cool running at speeds that cause other types of tires to overheat and blow out; it reduces slippage—permits higher speeds with safety; it has more traction—pulls through when solids and high-pressures can't.

Get the complete story of what it will do on your job from your General Tire Dealer today. The General Tire and Rubber Company, Akron, Ohio.



The only complete line of Truck Balloons—including 24-inch wheel sizes. Now you can change-over to balloons without changing wheels!

# The GENERAL Jumbo Truck-Balloon

-goes a long way to make friends

# NOW Acme Announces Proxlin Commercial Car Lacquer Black No. 650 THE BLACKEST HIGH GRADE BLACK LACQUER EVER OFFERED

# For used cars; Fender work; Delivery cars; Light duty trucks

THE latest Acme development—Proxlin Commercial Car Lacquer Black No. 650.

An intense dense black which dries with a beautiful gloss—the highest gloss we have ever put out in a Gloss Black.

Will hold its own on durability with any Gloss Black on the market.

Especially adapted for used car and fender work and for all types of delivery cars and light trucks.

Being very elastic, it can be applied on wood or metal bodies over either old paint or lacquer finish when in good condition.

Does not need rubbing and polishing but has its own distinctive deep gloss.

Completely eliminates one coat of clear gloss lacquer and the task of hand rubbing. Think of the money—the time and the laborious work this saves you! You can turn out good looking jobs in far less time.

The closest match to a baked enamel finish ever produced! Just what the shop owner has been looking for!

You owe it to yourself to get acquainted with Commercial Car Black—to see what a really great saving it is. Once you have tried it, you will have no other.

Only \$5.00 per gallon in one gallon cans, and \$1.40 in quarts. Five gallon cans \$4.80 per gallon.

## BIG NEWSI

See this publication next month for a Proxlin announcement of tremendous importance to you. Don't miss it! It points to an easy road to increased profits.





# Send your order for PROXLIN COMMERCIAL CAR LACQUER\_BLACK No. 650 to these Proxlin jobbers

ALABAMA	Tenk Hardware Co Quincy	NEW JERSEY	The Pennsylvania Rubber &
Ozburn-Abston & Co Huntsville	Fred Campbell Auto Supply Co West Frankfort	Norwood Tire Co Atlantic City Herman Dobbs Bayonne	General Autom. Sup. Co., Harrisburg
Allen & Jemison Co Tuscaloosa	INDIANA	National Auto Accessories	Johnstown Automobile Co., Johnstown
ARIZONA	Boottleber & Kellogg Co Evangville		General Autom. Sup. Co Lancaster
Motor Supply Co Phoenix Motor Supply Co Tucson	Boetticher & Keilogg Co. – Evansville Fort Wayne Iron Store Co., Fort Wayne Central Rub. & Sup. Co. – Indianapolis Ridenour Auto Supply Co. – – Kokomo	E. B. Degenring & Co Elizabeth Norwood Tire Co Long Branch Morris Dutton Morristown	Supply Co Oil City
ARKANSAS	Central Rub. & Sup. Co Indianapolis	Morris Dutton Morristown	Geo. W. Nock Co., Inc., Philadelphia
		Economy Auto Supply Co Newark W. E. Pruden Co Newark Wildgoose & Lewis Auto Supply	General Autom. Sup. Co Lancaster The Pennsylvania Rubber & Supply Co Oil City Geo. W. Nock Co., Inc., Philadelphia Dyke Motor Supply Co Pittsburgh E. S. Youse Co Reading The Chas. B. Seott Co Seranton General Automotive Sup. Co York
Ozburn-Abston & Co Jonesboro The Voss-Hutton Co Little Rock	John J. Harrington, Inc Richmond Howard Cranfill Co., Inc South Bend	W. E. Pruden Co Newark Wildgege & Lewis Auto Supply	The Chas. B. Scott Co Scranton
CALIFORNIA	Howard Cranfill Co., Inc South Bend	Co New Brunswick Melbourne & Ritter Perth Amboy	General Automotive Sup. Co York
H. M. Miller Co Anaheim	Fred Campbell Auto Supply Co Terre Haute	Melbourne & Ritter Perth Amboy	SOUTH CAROLINA
Auto Geor & Supply Co El Centro	TOWA	Norwood Tire Co Perth Amboy Stavish Auto Top Co Plainfield	The Bailey-Lebby Co Charleston Jenkins Automotive Parts
H. M. Miller Co Fullerton Parker & Black Glendale	Robert Donahue Co Burlington	Charles Schick & Co Trenton	Service, Inc Columbia Motor Supply Co Florence
Holland Auto Service - Highland Park	Sieg Company Davenport	NEW YORK	
Shaefer's Battery & Ignition	J. W. Edgerly & Co Ottumwa	United Auto Parts, Inc Binghamton	SOUTH DAKOTA
Co	Robert Donahue Co. — — Burlington Sieg Company — — — — Davenport Wm. H. Mets Co. — — Des Molnes J. W. Edgerly & Co. — — Ottumwa W. A. Walbert Co. — — — Sloux City	United Auto Parts, Inc. — Binghamton E. Krieger & Son, Inc. — Brooklyn W. Bergman Hardware Co. — Buffalo Cortland Auto Sup. Co., Inc. — Cortland E. Kreiger & Son Inc. — Long Island City	Hatfield Motor Supply Co Aberdeen General Motor Equip. Co Mitcheli
The Banta Co Los Angeles	KANSAS	Cortland Auto Sun Co. Inc Cortland	Watertown Motor Accemories
The Banta Co Los Angeles Stanislaus Auto Supply Co Merced	The Carl Graham Co Arkansas City	E. Kreiger & Son Inc Long Island City	Co Watertown
Stanislaus Auto Supply Co Modesto Peninsular Auto Parts Co Monterey	Barnhills Co Eldorado Ragland-Kingsley Motor Co., Hutchinson	W. E. Pruden Co New York City W. E. Pruden Co New York City W. E. Pruden Co Poughkeepsie Hadlock Paint Co Rochester The Olmstead Co Synacuse H. A. McRae & Co Troy	TENNESSEE
Waterhouse-Weinstock-Schvel	Southwick Autom. Sup. Co. – Topeka Carl Graham Paint & Wall Paper	Hadiock Paint Co Rochester	Motor Supply Co. — Chattanooga Osburn-Abston & Co. — Jackson Osburn-Abston & Co. — Memphis R. T. Clapp Co. — Knoxville Buford Bros. — — Nashville
Co Oakland Hibbard & Baylor Pasadena	Carl Graham Paint & Wall Paper	The Olmstead Co Syracuse	Osburn-Abston & Co Jackson
Inwood & Greene Petaluma	Co Wichita The Carl Graham Co Winfield	H. A. McRae & Co Troy	R. T. Clapp Co Knoxville
Ranchers' Mfg. Co Pomona	KENTUCKY	NORTH CAROLINA	Buford Bros Nashville
Hibbard & Baylor Pasadena Inwood & Greene Petaluma Ranchers' Mfg. Co Pomona Burton-Hall Rubber Co Redlands Acme Quality Paint Store - Riverside Geo. M. Cooley - San Bernardino Auto Gear & Supply Co San Diego Kimball-Upeon Co San Francisco Waterhouse-Weinstock-Scovel Co San Francisco	Davidson Brothers Bowling Green	Glasgow-Stewart & Co Asheville Glasgow-Stewart & Co Charlotte The Owens-Merritt Co Durham	TEXAS
Geo. M. Cooley San Bernardino	Davidson Brothers Bowling Green Monarch Auto Supply Co Covington Davidson Brothers Glasgow	The Owens Merritt Co Charlotte	Ed. S. Hughes Motor Co. — Abilene McDonald Auto Supply Co., Amarilio Texas Motor Sales Co.—Corpus Christi
Auto Gear & Supply Co San Diego	Davidson Brothers Glasgow	The Owens-Merritt Co. — — Durham Chesapeake Auto Supply Co. — — — Gastonia Clasgow-Stewart & Co. — High Point Boyinns, Inc. — — — Raleigh Glasgow-Stewart & Co. — Saliabury Moore & Stewart & Co. — Saliabury The Owens-Merritt Co., Winston-Salem The Owens-Merritt Co., Winston-Salem	Tevas Motor Sales Co Corpus Christi
Keyston Bros Sar Francisco	Wombwell Automotive Parts, Inc Lexington Stratton & Terstegge Co Louisville	Co Elizabeth City	The Ferris Co Dallas Motor Supply Co El Paso The Ferris Co Fort Worth
Waterhouse-Weinstock-Scovel	Stratton & Terstegge Co Louisville	Classow-Stewart Gastonia Classow-Stewart & Co - High Point	Motor Supply Co El Paso
Co San Francisco	Fred Campbell Auto Sup. Co., Paducan	Boylans, Inc Raleigh	Wessendorff, Nelms & Co Houston
San Pedro Paint & Paper Co. San Pedro	LOUISIANA	Glasgow-Stewart & Co Salisbury	Wessendorff, Neims & Co. – Houston Coulter Paint Co. – – San Angelo Southern Equipment Co., San Antonio McLendon Hardware Co. – – Waco
Turk & White Santa Ana	Auto Sup. & Elec. Co Baton Rouge David Bernhardt Pt. Co New Orleans	The Owens-Merritt Co Wilson	Southern Equipment Co., San Antonio
J. A. Van Horn Banta Barbara	Interstate Electric Co New Orleans	The Owens-Merritt Co., Winston-Salem	
waternouse-weinstock-scover Co. — — — San Francisco Standard Parts Co. — San Luis Obispo San Pedro Paint & Paper Co., San Pedro Turk & White — — — Santa Ana J. A. Van Horn — — — Santa Barbars A. W. Felis — — — Santa Maris E. C. Kraft & Co. — — — Santa Rosa	Interstate Electric Co. — New Orleans Interstate Electric Co. — Shreveport	NORTH DAKOTA	UTAH Provide
Stanislaus Auto Supply Co Stockton National Auto Parts Co Vallejo	MAINE	Quanrud, Brink & Reibold, Inc., Bismarck	Con. Wagon Co Provo Inter-Mountain Electric Co Salt Lake City
National Auto Parts Co Vallejo	Rice & Miller Bangor	Grant-Dadey Co Fargo	Co Salt Lake City
Hickey Bros. Co Ventura Whittier Motor Parts Whittier	Wetmore-Savage A. E. Co Portland	Grand Forks Sup. Corp Grand Forks Minot Supply Co Minot	VIRGINIA
COLORADO	MASSACHUSETTS	And the second s	Interstate Hdw. & Sup. Co Bristol
The Auto Equipment Co Denver	Wetmore-Savage A. E. Co Boeton Bettridge Speedometer Service, Brockton	ОНЮ	The Owens-Merritt Co Danville Barker-Jennings Hardware
CONNECTICUT	Boston Auto Supply Co Lowell	The Pennsylvania Rubber &	Corp Lynchburg
The C. S. Mersick & Co New Haven	MARYLAND	Supply CoAkron The Pockrandt Paint Co Akron	Corp. — — — Lynchburg Chemapeake Auto Supply Co., Inc. — — Newport News Benj. T. Crump Co., Inc. — — Newport News
FLORIDA	Auto Supply Co Baltimore	The Willis Co Canton	Reni T Crump Co
The Consolidated Automotive		Cron Tire & Supply Co Celina The Pennsylvania Rubber &	Inc Newport News
Co Gainesville The Consolidated Automotive	MICHIGAN Battle Creek	Supply Co Cincinnati	
Co Jacksonville	Wattles Hardware Co Battle Creek Howard Cranfill Co., Inc., Benton Harbor	The Pennsylvania Rubber & Supply Co Cleveland	Inc Crump Co., Inc., Richmond Beni. T. Crump Co., Inc Staunton Beni. T. Crump Co., Inc Winchester
Co Jacksonville Berner-Pease Co Miami	General Sales Co Detroit Michigan Autom. Supply Co Detroit	The Pennsylvania Rubber &	Benj. T. Crump Co., Inc Staunton
The Consolidated Autom. Co Orlando	Michigan Autom. Supply Co Detroit	The Pennsylvania Rubber & Supply Co. — — — — Columbus Smith Bros. Hardware Co. — Columbus The Lewis Motor Mart Co. — Dayton The Dyka, Keys Co. — East Liverpool	
Owen-Nicholas Co., Inc Tampa The Consolidated Automotive	Cumings Brothers Grand Rapids	The Lewis Motor Mart Co - Dayton	WASHINGTON
Co West Palm Beach	Cumings Brothers Flint Cumings Brothers - Grand Rapids Popp Hardware Co Saginaw	The Dyke-Keys Co East Liverpool The Dyke-Keys Co Steubenville The Union Supply Co Toledo	P. J. Cronin Co Seattle
GEORGIA	MINNESOTA	The Dyke-Keys Co Steubenville	Kilmer & Sons Co. — — — Spokane Reynolds & King Co. — — Tacoma Washington Hardware Co. — Tacoma Trenner Tire Co. — — — Yakima
A. R. Mustin Automotive Co Augusta	The W-K Supply Co Albert Lea	The Pennsylvania Rubber &	Washington Hardware Co Tacoma
Beck & Gregg Hardware Co. — Atlanta Butler Bros. Co., Inc. — — Columbus A. S. Hatcher Co. — — — Macon The Frank Corporation — Savannah		The Pennsylvania Rubber & Supply Co Youngstown	Trenner Tire Co Yakima
A. S. Hatcher Co Macon	Minneapolis Iron Store Co., Minneapolis Williams Hardware Co. — Minneapolis	OKLAHOMA	WEST VIRGINIA
The Frank Corporation Savannah	MISSISSIPPI	Don Richardson Co Blackwell	Flat-Top Auto Supply Co Bluefield
IDAHO		Oklahoma City Hardware Co., Inc Oklahoma City Ponea City Pt. & W. P. Co., Ponea City Economy Auto Top Co Tulas	Kanawha Drug Co Charleston T. T. Hutchisson Co Wheeling
Bertram Motor Supply Co Boise Inter-Mountain Elec. Co Pocatello	Osburn-Abston & Co Jackson Osburn-Abston & Co Tupelo	Ponea City Pt. & W. P. Co., Ponea City	WISCONSIN
ILLINOIS	MISSOURI	Economy Auto Top Co Tulsa	Automotive-Supply, Inc Appleton
F B Colling Co Bloomington	Auto Tire & Parts Co., Cape Girardeau The Faeth Co Kansas City Fred Campbell Auto Sup. Co St. Louis	OREGON	Automotive-Supply, Inc. – Appleton J. J. Stangel Hardware Co., La Crosse J.J. Stangel Hardware Co., Manitowoc Western Motor Supp. Co., Milwaukee Wisconsin Auto Supply Co., Wausau
E. B. Collins Co Champaign	The Faeth Co Kansas City	Fisher Bros Astoria	Western Motor Sup. Co., Manitowoo
Motor Car Supply Co Chicago	MONTANA	Bend Hardware Co Bend	Wisconsin Auto Supply Co., Wausau
E. B. Collins Co Danville	A. M. Holter Hardware Co Helena	Art Decorating Co Marshfield	WYOMING
Fred Campbell Auto Sup. Co Decatur	NEBRASKA	Fisher Bros.         — — — — — Astoria           Bend Hardware Co.         — — — Bend           Nordling Parts Co.         — — Eugene           Art Decorating Co.         — — Marshield           P. J. Cronin Co.         — — Portland           Salem Hardware Co.         — — Salem	The Wyoming Autom. Co., Casper
E. B. Collins Co Bloomington E. B. Collins Co Champain Motor Car Supply Co Chicago Unxid Motor Parts Co Chicago E. B. Collins Co Danville Fred Campbell Auto Supply Co Decatur Trackman Auto Supply Co Jolect		Salem Hardware Co Salem	HONOLULU, T. H.
Super Service Auto Parta, Inc., La Salle Sieg Company Moline National E. & A. Supply Co Peoria	Duda-Myers Co Hastings Duda-Myers Co Norfolk E. A. Pegau Co Omaha	PENNSYLVANIA	Honoiulu Auto Supply Co Honoiulu, T. H.
National E. & A. Supply Co Peorla	E. A. Pegau Co Omaha	Bee Automobile Co Allentown	Co Honolulu, T. H.

ACME WHITE LEAD AND COLOR WORKS (Proxlin Division) DETROIT, MICHIGAN



# It's Easy to Do RELIABLE Work with RELIABLE Tools!



FLEVATING

# Quality Brand Product Your Piston Rings

TO SOME dealers a piston ring means "How much does it cost me and how much can I get for it?"

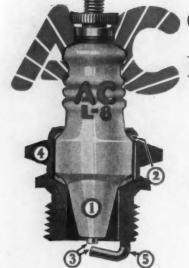
But to Quality Dealers a Quality Brand piston ring means many things. It means a satisfied customer; a liberal margin of profit; the knowledge that he has sold full piston ring value.

The Sta-Tite (compression and oil) has everything a ring with inner spring could have. But the important point is To Know Your Piston Rings.

To Know That Sta-Tite Is a Quality Brand Product.



### A NEW IMPROVED LINE



## OF LONG LIFE SPARK PLUGS FOR HEAVY DUTY SERVICE

Burning away of electrodes, fouling, "blow-by" and pre-ignition problems can now be overcome

The AC heat range system makes it possible to select the correct AC Long Life Spark Plug for every engine and operating condition. The heat range varies with the length of insulator. Therefore, if a hotter or cooler plug is required select one with a longer or shorter insulator.

All AC Long Life Spark Plugs have the type number stenciled on the upper half of the insulator, and this number designates the length of insulator exposed to the combustion heat in sixteenths of inches.

If the spark plugs you are using are chronically fouling, select an AC Long Life Spark Plug with longer insulator. If plugs are blowing-by, electrodes burning away or preignition experienced, select a type with shorter insulator.

In addition to the advantage of heat range selection, these new AC Long Life Spark Plugs have built into them these added features of design and construction:

- Wide range of insulator lengths to meet the heat characteristics of any engine
- 2) Solid copper gaskets, of extra heavy material, insure against compression leakage
- "ISOVOLT" alloy in center and side electrodes, of extra heavy size insures longer life. Its low voltage requirements, plus uniformity of performance, mean easier starting and a smoother running engine.
- (4) Patented one-piece construction makes it absolutely gas-tight
- Patented welded side-wire electrode has 35 times better electrical and 3 times better heat conductivity than a side wire inserted by the old "staking" method

Every AC wholesaler's salesman has special information which enables him to recommend the correct AC Long Life Spark Plugs to meet your particular requirements.

AC-SPHINX Birmingham ENGLAND **AC Spark Plug Company** 

FLINT, Michigan

AC-TITAN Clichy (Seine) FRANCE

AC SPARK PLUGS AC SPEEDOMETERS AC GASOLINE STRAINERS AC AMMETERS

AC AIR CLEANERS AC OIL FILTERS
AC OIL GAUGES AC THERMO GAUGES AC O

© 1930, AC Spark Plug Co.
S AC FUEL PUMPS
AC GASOLINE GAUGES

## FLEXIBLE SHAFT and ATTACHMENTS



#### Save Time and Labor Gain Speed and Profit

ERE is the kind of speed tool you find in modern money-making shops and service stations. It's the kind of tool that the men like to work with. They can do better work and handle more jobs per day without getting tired. Its light weight and compactness make it easy to handle—just the tool for those difficult, out of the way places. It takes the tool to the work. Built for long service. Roller bearings on shaft prevent friction and woork.

Sioux attachments are available far making quick, easy work of many different operations in reconditioning cars . . . grinding, carbon removing, valve lapping, drilling, cleaning, sanding, smoothing rough spots and welds, reaming, polishing, paint removing, etc. In paint shops, body and fender works, as well as in service stations. Slow Flexible Shaft and attachments are considered indispensable once they are put in service.

Your Jobber Sells Them.

ALBERTSON & CO. INC., Sioux City, Iowe, U. S. A.



STANDARD THE WORLD OVER



The oil companies and manufacturers of oil filters, oil purifying and other lubricating devices have spent millions in educating the driving public to the value of proper lubrication. Visco-Meter joins their ranks with the hope of doing its share to the end that motor cars may live longer and happier lives.

Of course not. Who'd want a glass crankcase, anyhow, now that VISCO-METER is on the job? This new, scientific device tells you things about your lubrication that you couldn't possibly see thru glass. Yes, and it gives this information continuously, at the moment of observation and under actual operating conditions.

NOT a Pressure Gauge

The function of the Visco-Meter is to register viscosity or lubricating quality—so that each driver can tell at a glance what's in the crankcase. Is the right grade of oil being used? Has it been diluted beyond usefulness? Visco-Meter flashes the facts . . . It also gives timely warning of a clogged system, leaks or faulty oil pump.

Saves Oil . . . Prevents Trouble "The right oil in every crankcase"

that's Visco-Meter's goal. By keeping the exact condition of the lubricant constantly known, the Visco-Meter prevents the draining out of oil that's still good—or the use or oil too thin to lubricate



. . . This is bound to mean a big saving in oil.

Visco-Meter is ruggedly built, with one moving part that never needs servicing. Easy to install—completely illustrated instructions are furnished for each make of truck . . . The Visco-Meter dial can be attached in place of the pressure gauge, on the steering column, or anywhere on the instrument panel . . . Send coupon. Visco-Meter Corporation, 316 Grote Street, Buffalo, N.Y.

The VISC WIETER Of Motor Lubrication

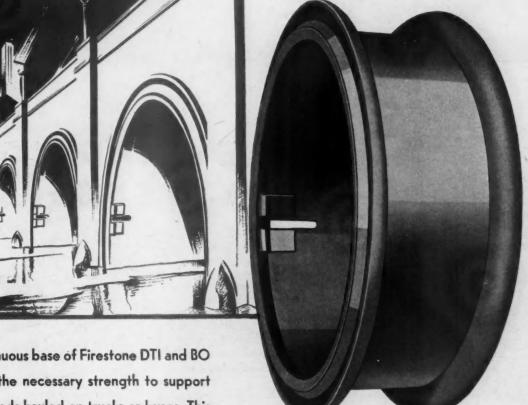
THE VISCO-METER CORPORATION, 316 Grote Street, Buffalo, N. Y. Please give me the facts about Visco-Meter.

Name and address.

June, 1930

The Commercial Car Journal and Operation & Maintenance





THE continuous base of Firestone DTI and BO rims has the necessary strength to support the heavy loads hauled on trucks or buses. This continuous band gives the tire the most secure base support, unequalled for strength, because it is not disturbed when changing tires. The one-piece cylinder assures longer life, greater dependability and safe performance.

Specify Firestone Rims for All Types of Wheels—Wood, Wire, Disc or Cast
—For Changeovers and for New Trucks or Buses.

FIFESTOTES CONTINUOUS RIMS

Copyright, 1930, The Firestone Steel Products Co.





Every fleet needs at least one. Most fleets need several. Prices start at \$24.00 — and the quality is all you desire.

# 1930 IS REWARDING

MISE SPENDERS
Make your Shop Make Money!

lined with fish-hooks last Fall. We are not likely to see any reckless "prosperity" but you know and we know of plenty of men who are making money.

Ever since last February we have been reminding you that the smartest fleet owners would be the ones who took the high cost out of maintenance work. Every week is proving that our advice was—and IS correct.

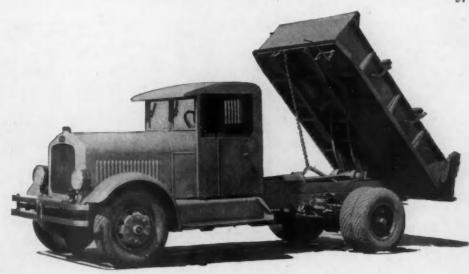
Make your shop help you to clear a profit this year, just as it is doing for others. Be downright stingy about buying non-essentials, but SPEND WISELY for any equipment that will cut maintenance costs and keep your units out on the road where money can be made.



This book should be in your hands. If you haven't asked for your free copy, ask for it today, before you forget.

#### UNITED STATES ELECTRICAL TOOL CO.

CINCINNATI, OHIO, 2455 W. Sixth St., and Branches in - Atlanta - Boston - Chicago. Cleveland — Dallas — Denver — Detroit — London — Los Angeles — Minneapolis — New York — Philadelphia — Pittsburgh — St. Louis — San Francisco — Seattle — Syracuse — Toronto — Winnipeg EXPORT REPRESENTATIVES: Westinghouse International Co., 150 Broadway, New York





#### ALL-STEEL HOIST

Nineteen years of recognized leadership have made possible this new, more powerful, slant type, all-steel hoist.

# THE NEW WOOD IMPROVED SLANT TYPE HYDRAULIC HOIST



Get all the FACTS! Write for bulletins which tell the complete story on the profitable operation of dumping equipment.

New power to lift heavy loads—new speed for fast dumping—new rugged unit construction; these features of the new slant type hoist built by Wood are evidence of new and greater value. The complete new line is our greatest achievement in hydraulic hoist construction.

#### **WOOD HYDRAULIC HOIST & BODY COMPANY**

DETROIT : MICHIGAN

BRANCHES AND DISTRIBUTORS IN PRINCIPAL CITIES

The Commercial Car Journal and Operation & Maintenance

June, 1930



## "Thousands of dollars saved

#### says operator of 126 buses

Read how this company protects its tire investment . . . cuts maintenance costs . . . with these three Schrader products.

We earnestly ask you to read this letter. It tells in detail how the Nevin Bus Lines protect their tires with Schrader products.

NEVIN BUS LINES JOURNAL SQUARE JENSEY CITY, N. J. THEN YOUR THE SHARE SILL STANDARD MADE per Test per Test per test tests per test tests Sandary, M. T. 100 Execute Season Tribution sold



Core is in every valve. Equally dependable

for holding air in bus

balloon or high pressure truck or bus tires.

NE hundred and twenty - six modern buses all equipped with pneumatic tires... operate steadily in the local and long distance services maintained by the Nevin Bus Lines of Jersey City, N. J.

Their investment in operated in the long distance service of the Nevin Bus Lines. These coaches are all equipped with bus balloon tires. tires, alone, is tremendous. To protect this investment

. . to get maximum tire mileage . . . the Nevin Bus Lines have wisely adopted these three precautions:

First, every foreman and starter, as well as every driver on long distance runs, is furnished with a Schrader Tire Gauge. They are required to test their tires regularly-maintain proper pressures at all times.

Second, every valve is equipped with a Schrader Valve Core. This little mechanism is equally dependable for holding air in either balloon or high pressure tires.

Third, every valve stem is covered with a Schrader Valve Cap . . . air-tight up to 250 pounds.

In case of a damaged valve inside, this cap prevents the escape of air at mouth of valve until the inside can be replaced.

Thousands of other bus and truck operators have adopted these simple, positive rules of tire care. Tires last longer . . . buses ride and handle easier . and they are protecting their tire investments.

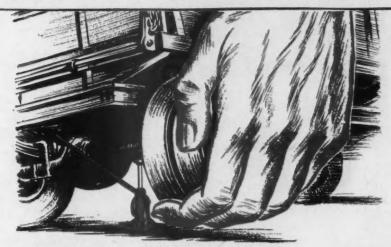
A. SCHRADER'S SON, Inc., BROOKLYN TORONTO LONDON CHICAGO Be sure it's a Schrader-Look for the name.

Tire Valves · Tire Gauges

pounds pressure.



#### HELPING POWER



#### Up, down and away with Blackhawk 1-hand lift

ASY strokes and up goes the truck — any size or weight. A turn of the wrist and down she settles - gently, automatically.

A Blackhawk lifts load and all. No need to wait for help, or dump the load, or transfer it to another truck.

No need to handicap the "boys" with back-breaking mechanical jacks. Hydraulic one-hand lifters save dollar-minutes on the road, make every truck deliver more pay loads, protect drivers from needless strain, pay for themselves. No wonder Blackhawks are standard on leading heavy trucks and truck fleets. Try these modern jacks and you'll OK them, too. Most truck and accessory dealers sell them.

Mail the coupon for proof of Blackhawk advantages.

BLACKHAWK MFG. COMPANY



# A full line of jacks — 1 to 75 tons capacity — a model for every truck and truck service need. Each a one-hand lifter. **JACKS**

BLACKHAWK MFG. CO. Dept C. O., Milwaukee, Wis.

Send folder on truck and shop jacks. 

Include wrench folder.

Individual.

Address



makers entirely of truck parts.

STEWART MOTOR CORPORATION BUFFALO, N. Y.

chanical features formerly found only on the finest trucks

plus the time tested and proven Stewart quality at a

price that smashes all precedent. From radiator to tail

light an honestly rated truck built by exclusive truck

Export Branch: 1 Broadway (Dept. 3) NEW YORK CITY, U. S. A. Cables: Stewartruk New York. Codes: Acme, Bentley.

New 5 Ton 6 cylinder 4 wheel Brakes \$4990

2½ ton 6 Cylinder 2690

ton 6 Cylinder 3290 3½ ton 6 Cylinder 3690

ton 6 Cylinder 4990

6-7 ton 6 Cylinder 5700

f.o.b., Buffalo





Stewart Trucks have won-By costing less to run

# CAPACITY

CLARK EQUIPMENT TYPIFIES POWER VALUE

PIONEER
ELECTRIC STEEL
MANUFACTURER

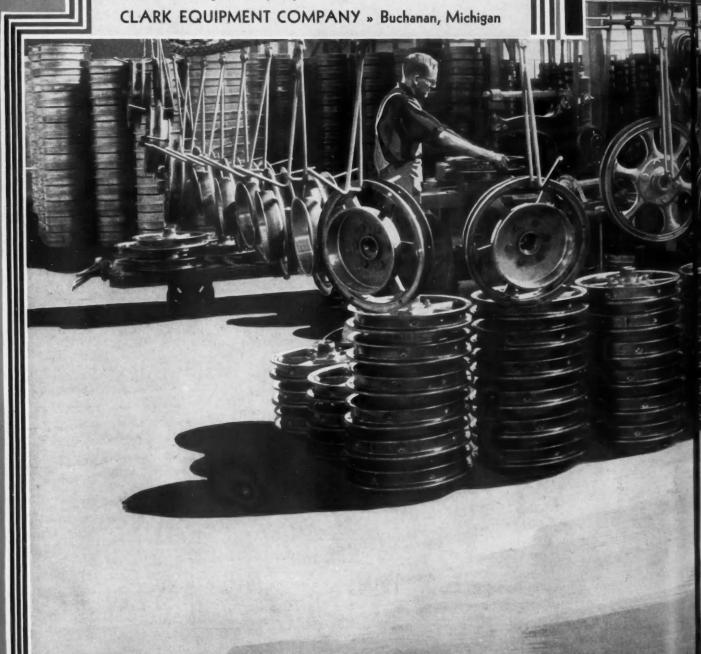


SIZE IS RELATIVE. Clark Equipment Company plants are more than large—they are adequate—far greater than the needs of any single automotive manufacturer or even several.

Each plant is a production unit specializing in a particular part.

Truck and car builders who use Clark coordinated running gears (axles, wheels and transmissions) not only buy the best units but gain real advantages in purchasing, stock keeping and servicing.

Wise executives seek strong sources of supply. Capacity to design wisely, capacity to produce adequately, must be linked with capacity to deliver promptly—the Clark Equipment Company possesses all these elements of strength and capacity.











TRACTOR and truck transmission production is a highly specialized manufacturing process. Few plants in the country possess tool and factory equipment for this work equal to the Clark Equipment Company and no organization has back of it better gear and other production facilities.

Consult us on your transmission problems.

TRANSMISSION DIVISION

CLARK EQUIPMENT COMPANY

BUCHANAN, MICHIGAN





This Expert Service

# means LOWER TIRE COSTS

To get the most truck tire mileage you need the *right* tire for the job. It is necessary to have more than just a good tire. Size, inflation, type...all of these factors and many others must be considered to get the lowest cost per tire mile.

Only an expert tire engineer can scientifically determine the right tire for the job. That's where the Fisk Transportation Engineering Department can help you. We will analyze the work your trucks do and the conditions under which they operate. We will recommend the right tires—we will tell you whether you need solid tires, high pressure pneumatics, or tires built on the new Air-Flight principle.

This service is absolutely free. It helps you from every angle. It results in fewer delays, less interruption, better all-round performance and, of course, a lowered tire cost.

Also, let us send you the famous Fisk Wheel and Rim Manual. This interesting book is jammed full with useful, moneysaving tire facts. It covers hundreds of

tire problems. It answers your tire questions. Your copy is waiting for you. Write today for this helpful book.

The Fisk Tire Company, Inc., Commercial Tire Department, Chicopee Falls, Mass.



mileage



# must have a GOOD wheel

If wheels broke down every trip, fleet owners would realize more than ever the importance of using good wheels. Yet, on every trip, wheels can cut deeply into your profits. Unventilated and swaying wheels on a speeding truck, can and do cause much trouble and expense in loss of time and tire mileage.

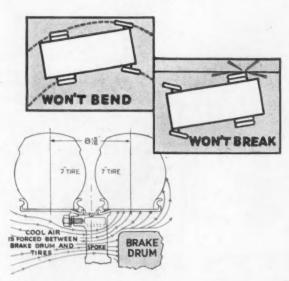
You want high speed with safety . . . high speed with money-saving tire mileage-and you get it when you specify Dayton Dual Pneumatic Steel Wheels.

Light in weight-remarkably strong they will not bend or crack or lose their positive true alignment in the toughest kind of service.

Dayton Duals save tires. Dayton spokes are so designed that strong air currents are forced between rim and brake drum-no air is wasted between the tires. Tires run cool and give greater mileage. Scientific tests prove it.

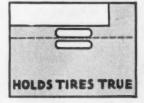
Only a tire and rim are needed as a spare with Daytons. No extra wheel necessary. No wheel repairs. The first cost of a set of Daytons is the last and only cost.

Distributors in principal cities throughout the country will give you quick, complete changeover service on Dayton Duals. Specify Daytons on your new trucks.



#### Dayton Brake Drums

are Superior in Strength and Wearing Qualities. The metal, made by a special process in electric furnaces, has an even distribution of graphitic carbon. Dayton Brake Drums last longer, stay smooth and save brake linings.



#### The DAYTON STEEL FOUNDRY Co., Dayton, Ohio

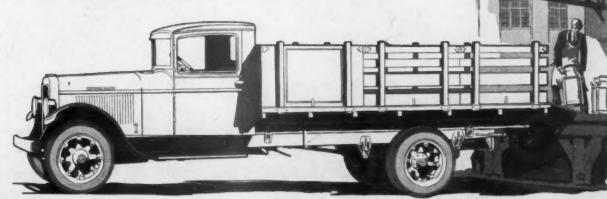
We have acquired the Tigerloy Brake Drum Division of the Massillos Steel Castings Company of Massillon, Ohio

# he Mark of a Good W

June, 1930

The Commercial Car Journal and Operation & Maintenance

## Reo Engineers Offer Proven Developments In Speed Wagons!



This is the second summer for the Reo Gold Crown Engine, used exclusively in Speed Wagons.

No product of Reo engineering or Reo facilities ever gave greater satisfaction to users.

Many have gone more than 50,000 miles without a valve-grind . . . thousands with nothing more than that.

The Gold Crown Engine has everything known to engineering now:

We mix enough costly pure chromium into the nickel-iron cast to give you cylinder walls and valve seats seven times longer lived than ordinary gray iron castings.

To match it, we use Lo-Ex pistons, so tough that they outwear two to three ordinary pistons.

Seven bearings (you can't use more!) cradle the scientifically balanced crankshaft.

For most efficient cooling we put 6 gallons of water through the cylinders every 7 seconds, at top speed.

A simple device so diverts the water flow that all cylinders are kept within 4° temperature of each other.

Thus all "hot water pockets"—that account in the end for frequent recurring troubles in other engines and that no repair shop can correct—are eliminated.



We cool the oil, too, with a special oil-cooling engine pan into which the oil drips from the bearings and side walls.

We maintain an oil temperature from 25° to 40° lower according to atmospheric changes in the season, and the oil is cleaned . . . mark this . . . every trip to the bearings.

There is so much to tell—such as the balancing and matching of all reciprocating parts...how Reo Engineers give you long-lived construction by eliminating both Friction and Vibration.

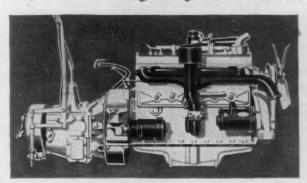
Right back to the rear axle, we can recite equally interesting processes and methods.

Six cylinder 7-bearing engines . . . 4-wheel, two shoe, internal, hydraulic brakes . . . built-in magazine chassis oilers and other features.

Wheelbases up to 210"... all sizes up to 15,000 pounds net pay-load capacity with trailers... high pressure or balloon tires.

REO MOTOR CAR COMPANY

Lansing, Michigan



The Reo Gold Crown Engine

247-1



### that increase White leadership in retail delivery

No truck has ever approached White's leadership in the field of retail delivery. Low cost, absolute dependability and proved long life have been responsible for the fact that the operators of the largest retail delivery fleets have standardized on Whites.

More than 350 department stores alone operate over 3000 White Trucks—by far the greatest number of owners of any single high-grade make of truck. In fleets of 10 or more and in smaller fleets hundreds of Whites in retail delivery service have each run from 100,000 to 300,000 miles and are still in service. Whites have set the highest standard in department store service and the lowest delivery cost per package.

Model 60 and Model 61 are the most modern delivery trucks on the market. The powerful White six-cylinder, seven-bearing crankshaft engine delivers unfailing power—higher average speeds on all routes—quick pick-up for the fast get-away—smooth running with greatest fuel economy.

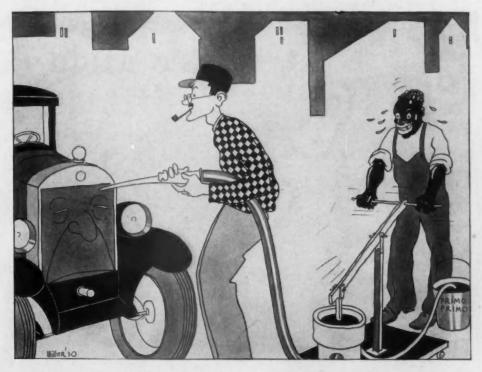
Four-wheel hydraulic brakes new refinements for easy steering and driver comfort—are special White features. Standard and DeLuxe bodies are available on both models.

THE WHITE COMPANY, CLEVELAND

## WHIF

A COMPLETE LINE OF FOUR AND SIX CYLINDER

TRUCKS BUSSES



## WE HAD A CURE-ALL!

It must be great to say: "NOW, for the first time in the history of the automotive field, comes this super-super revolutionizer. Three squirts of PRIMO-PRIMO and your car's troubles vanish like nobody's business."

But, you know, we can't do anything like that. We have a good product in the Leece-Neville Voltage Regulator, of course. It keeps your batteries constantly in good condition. It keeps your trucks and buses where they ought to be—on the road—earning profit and satisfying customers.

That's our story. All we can do is to keep plugging away at it month after month, year in and year out. The Leece-Neville Voltage Regulator is a good product. It keeps batteries constantly in good condition. There are satisfied Leece-Neville users in your territory and we can prove it at the same time you ask us to prove our story on Voltage Regulation.

### Voltage Regulation Minimizes Electric Maintenance

- 1 Battery cannot be overcharged.
- 2 The battery is charged only at the correct rate for its state of charge.
- 3 Battery will operate longer without requiring replenishing of electrolyte.
- 4 Life of battery greatly prolonged.
- 5 Lights can be operated direct from generator.
- 6 Loose connections will not cause lamp bulbs to burn out.
- 7 Makes most economical generator system.
- 8 Any Leece-Neville Voltage Regulated Generator can be used without battery.
- 9 Lamp life greatly prolonged
- 10 Motor coaches fitted with Leece-Neville voltage regulated generators provide passengers with satisfactory illumination and safe transportation.

### BUT ALL WE HAVE IS A PRACTICAL NECESSITY

LEECE-NEVILLE CO. — CLEVELAND, OHIO



Introducing the Cleco Multi-Power Brake

The Booster That Amplifies Pedal Power 300%

After twelve months of exhaustive road tests, the Cleco Multi-Power Brake—the all-mechanical booster—is ready for commercial car operators.

This revolutionary, low-priced unit, easily installed between the brake pedal and the equalizer, amplifies the pedal power 300%. It is an integral part of the braking system and cannot fail to function.

The illustration shows the ease and power of the Cleco Multi-Power

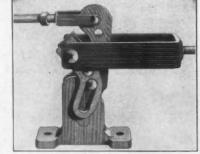
Brake. The 60 pounds pressure on the pedal becomes 180 pounds pressure on the drums.

An additional—and important—feature of the Cleco Multi-Power Brake is its ability to quickly take up a greatly increased brake clearance in the first inch of pedal travel, leaving a long, soft and powerful pedal stroke.

Brake-lining wear is caused chiefly by close adjustment and the riding of the brake. By making safe and practical increased brake-lining clearance, by eliminating "brake-riding" through establishing complete confidence on the part of the operator, the Cleco Multi-Power Brake greatly increases the life of the lining and

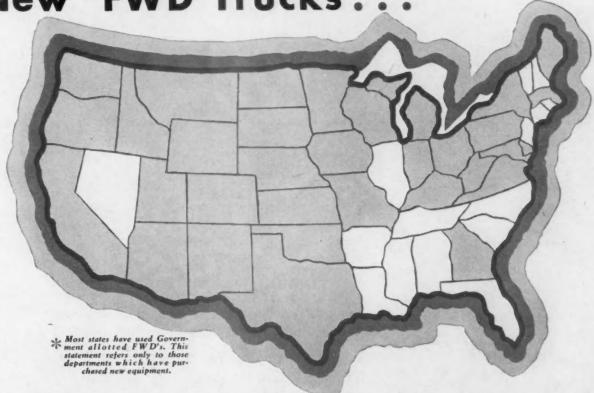
> minimizes brake adjustments.

> Complete information and prices may be secured by writing to The Cleveland Pneumatic Tool Company, Cleveland, Ohio.



CLECO AUTOMOTIVE PRODUCTS
MANUFACTURED BY THE CLEVELAND PNEUMATIC TOOL CO., CLEVELAND, OHIO

33 State Highway Departments Have Purchased New \*FWD Trucks...



THIRTY-THREE state highway departments and five Canadian provincial

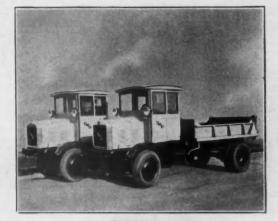
highway departments have purchased FWD trucks. These trucks are used for general hauling, and such "extra work" as snow removal, pulling graders, scrapers and drags.

The 1930 FWD is modern in every respect. Twenty years of continual improvement has resulted in a truck which meets the present demand of progressive truck operators. Power, speed, traction—they are all

embodied in this goodlooking, four-wheel drive truck... Dealers — there still are some open territories where FWD dealers will be appointed soon...write today for attractive dealer arrangement.



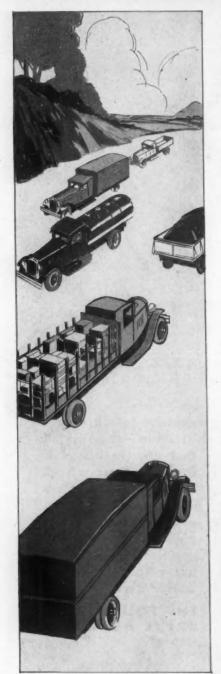
Canadian Factory: Kitchener, Ontario



BACKED BY NATION



### HUNT-SPILLER AIR FURNACE GUN IRON BRAKE DRUMS



### KEEP THOSE TRUCKS EARNING REGULARLY

HUNT-SPILLER AIR FURNACE GUN IRON BRAKE DRUMS assist to keep trucks earning regularly, increasing the value of the investment and producing a more profitable fleet of trucks.

HUNT-SPILLER AIR FURNACE GUN IRON BRAKE DRUMS noticeably reduce the wear on brake linings, reduce the time, labor and expense of brake upkeep, and wear longer themselves.

HUNT-SPILLER AIR FURNACE GUN IRON BRAKE DRUMS do not distort, score or tear linings. Longer service, quicker and smoother deceleration, and positive braking at all times are direct results with HUNT-SPILLER GUN IRON DRUMS. There is a size for every truck and bus.





UNT-SPILLER MFG.CORP

J. G. Platt, Pres. and Gen. Mgr.

V. W. Ellet, Vice-Pre

Office and Works

383 Dorchester Avenue South Boston, Mass.



## You Can't Overwork a Heil Hoist

Heil Hydraulic Hoists for dump truck service are so simple and fundamental in design and so sturdy in construction that you can't overwork them.

No matter how heavy the load—no matter what the twist of the chassis frame is—no matter how cold or hot the weather—the Heil Hoist will ALWAYS raise the body to full dumping position in from 10 to 15 seconds and dump the load.

There is no mystery about the outstanding performance records of Heil Hoists and Dump Bodies. Day after day—year in and year out Heil Hoists are serving road builders, state and municipal street and highway departments, coal merchants, sand and gravel companies, building supply dealers, etc., throughout the United States and in foreign countries.

The Heil Hoist reputation for trouble-free service is known wherever dump trucks are used. Write for a complete Heil Hoist and Body catalog.

Every Heil Hoist carries a written two year guarantee.



MILWAUKEE

CHICAGO

DETROIT

BRANCHES: NEW YORK 35 DISTRIBUTORS

PHILADELPHIA

WISCONSIN BOSTON

The Heil Twin Cylinder Hydramlic Hoist is compact, self-contained, no piping. Oil under pressure passing through channels cast into the walls is shown in solid red.

There is a Heil heavy days power takeoff for every make and model of truch buils. The idler gear and roller bearing construction make for long life.

The Commercial Car Journal and Operation & Maintenance

June, 1930



When a Timken Bearing has to be replaced, this quick Timken Bearing Service will enable your maintenance department to put the truck back on the job with the least possible delay.

And all questions relative to future bearing performance and service will be automatically answered and disposed of by the name "Timken" stamped on the cup and cone of every genuine Timken Bearing.

THE TIMKEN ROLLER BEARING SERVICE & SALES CO., CANTON, OHIO

A nation-wide network of Timken Authorized
Distributors supported by a complete
branch warehouse system.

## TIMKEN

ROLLER BEARINGS



## e Can't Afford



to use anything else



## HAVE

"If I put one of my trucks in the shop for brake repairs it means just 50% off my profit for the day. That's why I can't afford to use just an ordinary brake drum. It

costs too much to have to pull worn drums for machining every 20,000 miles.

"I use Gunite Brake Drums. Everybody does when they get wise to how much a poor brake drum costs in lost service, shredded brake linings and constant brake adjustments. I've got Gunite Brake Drums on both my trucks and when I looked at them at 50,000 miles they were just as smooth and true as they were the day I put them on. That's because Gunite Drums fit right at the start . . . making it easy to get a good, close adjustment without heating the drum. Even my brake linings last four times longer on Gunite Drums."

"Bus service is just about as hard on brake drums as anything could be. My men average five or more stops to the mile and when the bus is loaded that's some job for

the brake drums. If the drum goes bad it means a full day's job for two mechanics to put on new drums. If we pull a bus for brake repairs it means \$100 less income for the day. That's why we can't afford to gamble with poor brake drums.

"Every one of our 208 buses has Gunite Brake Drums now. The first set of Gunite Drums has gone over 100,000 miles and they're still smooth. Gunite Drums also eliminated grabbing brakes for us and our passengers have mentioned it. Even my drivers make better safety records, too, since we've used Gunite Drums."

Both large and small operators can save money by using Gunite Brake Drums. Gunite—a new metal that is not an alloy—has just enough graphite content to keep braking surfaces smooth as satin. It is extremely rigid. Gunite Drums are held to .009 of an inch Concentricity at the factory and concentricity at the factory and come to you perfectly round, ex-actly drilled to fit. Obtainable also as factory equipment on any bus or truck made.

Write for the Gunite catalog. THE GUNITE CORPORATION



## GUNITE BRAKE DRUMS

## Hercules Power Helps to Build Highway Through Wilderness

WORKING shoulder to shoulder with the shovel—hauling away capacity loads of dirt over an unimproved right-of-way—operating for months under the most difficult conditions—Hercules-Powered Kenworth trucks helped build a new State road through a virgin forest in Washington.

This hauling job in the wilderness demanded trucks with the utmost stamina and reliability. Joyce Bros., owners of the 4-ton Kenworths, undertook the contract with perfect confidence because they knew they could rely with certainty upon the staunch and rugged Hercules Power.

Hercules Engines have established many such records of performance. On trucks and buses in all parts of the country they have demonstrated again and again their all-around superiority in heavy-duty service.

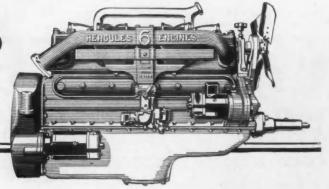
HERCULES MOTORS CORPORATION

Canton, Ohio, U. S. A.

West Coast Branch: Los Angeles, Calif. Mid-Continent Branch: Tulsa, Okla.



## HERCULES ENGINES





### IN THE TOOLS YOU BUY AND THE TOOLS YOU OWN

Tools must perform like you pay for from cutting every other piece of shop equipment. You buy them to speed up your shop, and to lower the cost of your maintenance work. When they fail in either of these . . . you don't get what you pay

Brubaker, and the new Brubaker Service will help you get more than

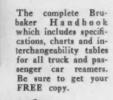
tools.

(1) More out of the tools you own, by expert reconditioning, handled by a leading automotive jobber, in your own locality.

(2) More out of the tools you buy, through an allinclusive line of reamers, taps, dies, valve reseaters and special cutting tools sold singly and in sets, by that same leading jobber.

It took fifty years to develop this line of quality cutting tools, and it took many months to develop the plan by which thousands of car and truck dealers, fleet operators, repairmen and service station owners are realizing a new saving on cutting tool investments. Our reamer expert will be glad to inspect your tools when he is in your city. Write us for more detail.

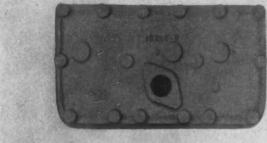
W. L. BRUBAKER & BROS. CO. MILLERSBURG, PENNA.





Cylinder head and manifold castings produced from Nickel Cast Iron by THE BROWN CLUTCH CO., Sandusky, Ohio







NICKEL ALLOY GREY IRON and SEMI-STEEL CASTINGS

Not only recently, but for a long time we have appealaized in Grey iron and Semi-Steel Castings, narticularly for the Machine Tool particularly for the Machine Tool and Automotive Industries,

\* Perhaps a bit more costly per The perhaps a bit more costly per long run, reducing to a minimum machining lasses and ensuring nachining losses and ensuring macaman svores und camera longer service on wearing parts,

If you require close grained machinable castings you will be and Price.

COMPLETE SERVICE

Engineering, Wood and Metal Pat-terns, Grey Iron, Semi - Steel and Nickel Alloy Cartings, Machining

ESTIMATES FURNISHED
WITHOUT OBLIGATION
ON YOUR PART

THE BROWN CLUTCH CO., Sandusky, Ohio INTRICATE GREY IRON. SEMI-STEEL AND NICKEL ALLOY CASTINGS OF QUALITY

Nickel Cast Iron

\*"perhaps a bit more costly per pound but less expensive in the long run"

The Brown Clutch Co., Sandusky, Ohio, has found through many years of experience in producing castings of intricate design that Nickel Cast Iron is ideally suited and economically sound for parts which are subjected to abnormal service conditions.

Nickel Iron castings are stronger, denser and tougher than ordinary gray cast iron, and at the same time readily machinable. The uniform structure of Nickel Cast Iron is due to the matrix development and the refinement of the free graphite.



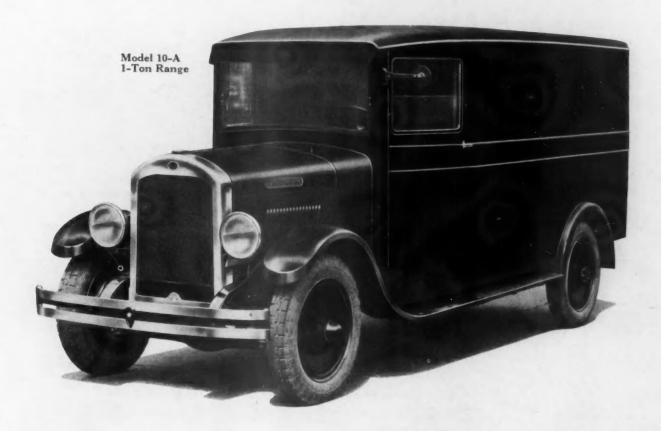
Nickel FOR CAST IRON

Our foundry specialists will gladly discuss your casting problems with you

THE INTERNATIONAL NICKEL COMPANY, INC., 67 WALL STREET, NEW YORK, N. Y.

## Fisher-Standard

"Built of the Best and stand the Test"



#### **SPECIFICATIONS**

**Continental Motors** 

Brown-Lipe Clutches and Transmissions

Timken Axles

Lockheed Hydraulic 4 Wheel Brakes

> Westinghouse Air Brakes

Capacity 3/4 to 10 Tons

Announcing a Complete New Line of Motor Trucks

WITH

GREATER POWER— STRENGTH—STURDINESS and LONGER LIFE

Albert Bisher

President

### NEW profitable Floor Plan for DEALERS

THE EMBLEM OF OUALITY MOTOR TRUCKS



## Standard Motor Truck Company

DETROIT, MICH., U.S.A.

Cable Code--Fishertruk

The Commercial Car Journal and Operation & Maintenance

June, 1930

STRONG TO BEAR BURDENS
- LIGHT TO MOVE





### 100 DAYS WORK FREE

Truck operators are in the business of hauling pay load, not dead weight. Bodies built of strong Alcoa Aluminum Alloys reduce dead weight to a minimum.

Here is the experience of the Bekins Van and Storage Company, Los Angeles. Their 3-ton capacity truck carried one ton of unnecessary Dead Weight. Trip after trip, it carried this unprofitable load of one ton which could easily have been turned into pay load. Then a new body of Alcoa Aluminum Alloys was built. The hauling capacity of the truck was increased 33½%, meaning that on an average of 300 working days a year, it could haul the equivalent of 400 days load; or 100 days free hauling at the old capacity.

Why pay tribute to dead load—when you can keep the profits for yourself?

There is case after case of this character, each of which has quickly returned the added expense, and then started paying dividends. Let our engineers cooperate with you in capitalizing upon the weight saving of strong Alcoa Aluminum Alloys. ALUMINUM COMPANY of AMERICA; 2439 Oliver Building, PITTSBURGH, PENNSYLVANIA.



## ALUMINUM



HE BIG SWING IS TO U.S. TIRES

> UNITED STATES RUBBER COMPANY



WORLD'S LARGEST PRODUCER OF RUBBER

THE SYMBOL

IA FRANCE
GEOUGIG



LAFRANCE =

(Above) AMERICAN-La FRANCE CHIEFTAIN. 4-tons capacity. 6-cylinder, 75 h. p. truck engine. Heavy transmission, providing 8 forward and 2 reverse speeds. Heavy-duty, full floating Timken rear axle. Radius rods. 4-wheel internal expanding brakes with flexible cable control. Over-strength frame. Husky springs with auxiliaries. Built for many years of continuous service.

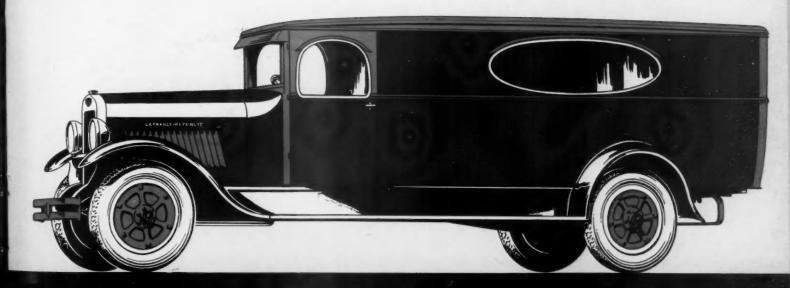
(Right) La FRANCE-REPUBLIC A-1. 6000 pounds straight rating capacity. Powerful 6-cylinder, 58 h. p. truck type motor. Heavy duty, 4-speed transmission. Sturdy, bevel gear rear axle. 4-wheel hydraulic brakes. Long, wide springs. Deep, heavy frame. Metal spoke wheels with balloon front tires and trucktype rear tires. Generous road clearance. Easy steering.

## OF ENTIRELY NEW STANDARDS OF MOTOR TRUCK PERFORMANCE...

The ability to make money for its owner is the true measure of a truck's value . . . not results for a few months or a year or two, but profitable performance over a long period of time. This emblem, new in form but old in the names it bears, identifies a line of trucks built to new standards of performance. The line is complete . . . new . . . modern. And every model possesses outstanding ability to do its work more efficiently and at lower cost. Whether you operate trucks or might be interested in a dealer franchise offering exceptional money-making possibilities, write for complete and convincing data.

### THE NEW, COMPLETE LAFRANCE-REPUBLIC LINE

Model A-1.	6,0	000	Ib	5.	Strai	ight	Rating	Capacity	
Model C-1.	7,0	000	Ib	s.	Strai	ight	Rating	Capacity	
Model D-1.	9,0	000	lb	s.	Strai	ight	Rating	Capacity	
Model F-2.	12,0	000	-13	,0	001	bs.			
				-	Strai	ight	Rating	Capacity	
Model H-1.	15,0	000	Ib	5.	Strai	ight	Rating	Capacity	
Model L-1.	18,0	000	lb:	s. :	Strai	ight	Rating	Capacity	
Model M-1.	20,0	000	Ib	5.	Strai	ight	Rating	Capacity	
"Chief" .						2-2	1/2 tons	Capacity	
"Chieftain"						3-4	tons	Capacity	
"Big Chief"						5-7	1/2 tons	Capacity	



REPUBLIC

(Right) Unretouched pictures of two brake drams. The upper one is still in perfect condition after many miles of friction contact with American Brakebloks. The lower one, used with amother material, is badly scored and gouged.

## CUT YOUR MAINTENANCE COSTS this way:

Install American Brakebloks . . . They have no metallic content to cut or score your brake drums

AMERICAN Brakebloks cut the cost per stop! They cut the cost of brake repair. They help keep expensive equipment on the road, working and earning. They are safer, more comfortable, more dependable.

These are not mere statements, but FACTS—facts proved by road and laboratory tests so severe that they would have ruined any ordinary brake material.

American Brakebloks thrive on tests! All they ask is a trial—anywhere, under any condition. For American Brakebloks are entirely new and different. No other new product ever offered so many improvements—so many outstanding and revolutionary advancements. That's why they welcome tests. That's why they have won so quickly a place on the production lines of over 40 manufacturers of buses, trucks and brakes.

Consider the cost of drum repair! American Brakebloks will easily pay their way through savings in this one item alone. For American Brakebloks have NO metallic content to cut or score your drums. Use them with drums

which are equally good, and they practically eliminate scoring.

Begin now to save money with American Brakebloks. The sooner you test them, the more money you will save! Write us today for full particulars and name of nearest jobber.

Five More Reasons Why American Brakebloks Cut the Cost per Stop:

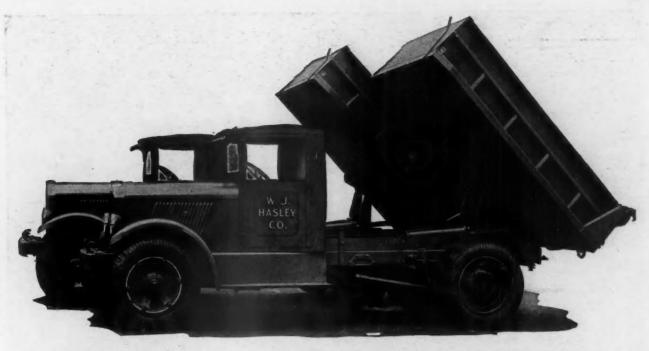
- 1. They have proper frictional qualities throughout their entire thickness. This assures smooth velvet stops throughout the life of the material.
- 2. They will not burn or smoke. Heat, even under the most severe conditions, will not affect them.
- 3. They are non-compressible even at many times the highest pedal pressures. This assures uniform wear at all points, and many less adjustments.
- 4. They will not swell or wedge, and therefore cannot wear off in spots.
- 5. They recover quickly and completely from the effects of water, oil and grease.



AMERICAN BRAKE MATERIALS CORPORATION
Industrial and Automotive Division American Brake Shoe & Foundry Co.
4660 Merritt Avenue Detroit, Mich., U. S. A.
Sales Offices: Chicago New York San Francisco
Export Department, 30 Water St. New York City

## American

## BRAKEBLOKS



Two Relay Trucks equipped with Model 7UB St.Paul Underbody Hydraulic Hoists and three-yard bodies with two-yard extension side boards, for W. J. Halsey Co., by the Schnabel Co., of Pittsburgh, Pa.

### Star Performers

There's a certain act that's becoming more popular every day. This act is increasingly popular because it saves time and labor, or, in other words, money. The act is dumping every kind of a thing on every kind of a truck, everywhere. St.Paul Hoists are veterans at this act. Their performance is so perfect that the applause is great, and that's as it should be, because, as far as dumping goes, St.Paul Hoists are the star performers.



Model 8UB St.Paul Underbody Hydraulic Hoist on Hug Roadbuilder, Model 97-6 with maximum load capacity of 18,000 pounds.

If you have a new truck or an old truck, a heavy truck or a light truck—there is a St. Paul Hoist for it.

"Ask the Dump Truck Driver on the Job"

## St.Patt — VERTICAL AND UNDERBODY HYDRAULIC HOISTS

St.Paul Hydraulic Hoist Company

Factories at St. Paul, Minnesota

A St. Paul Hoist Distributor and Service Station is near you. Write for name and address.

Nothing Finer
Can Be Said of Any
Motor Vehicle Than,
It is-



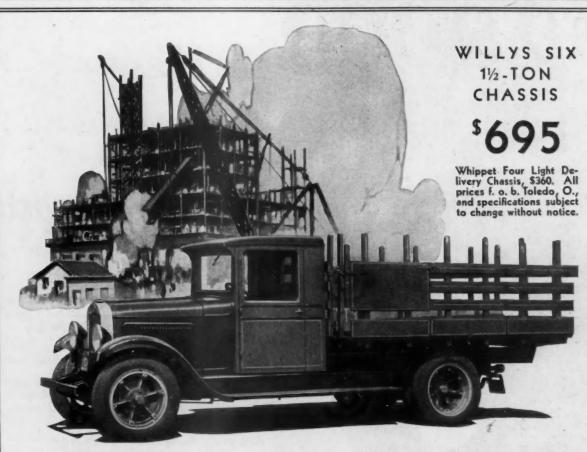
LYCOMING MOTORS

LYCOMING MANUFACTURING CO.
WILLIAMSPORT, PENNSYLVANIA

Lycoming's Vast Resources, Experience and Skill Are Dedicated to Leadership in Fine Motor Building

June, 1930

The Commercial Car Journal and Operation & Maintenance



## CUT YOUR HAULAGE COSTS WITH FAST, RELIABLE SERVICE

Increasing sales of the Willys Six 1½-Ton Truck prove that many operators realize how effectively this modern commercial unit speeds up delivery and lowers costs. Engineered to the minute, the Willys Six Truck has 4-speed transmission, 65 horsepower engine, rigid steel frame, extra long springs, semi-floating type rear axle with heavy spiral bevel gears and electric furnace steel one-piece housing. Body types for every business need.

WILLYS-OVERLAND, INC., TOLEDO, OHIO

## WILLYS SIX

11/2-TON TRUCK

## In 20000 miles— ERMALITE Brake Drums

wear only an average of

## two - thousandths

You can profit by the experience of other automotive manufacturers, who have found that Brake Drums of ERMALITE give safer, smoother braking at high speeds, and also—

Wear far longer than ordinary brake drums.

On road tests, ERMALITE Brake Drums have worn an average of only .002 in 20,000 miles. This great resistance to wear in actual service means fewer brake adjustments—

And brake linings last much longer.

ERMALITE drums remain true to contour; friction heat does not affect them.

We will be glad to send you complete information and samples—

And will quote you on ERMALITE Brake Drums either as rough castings or finished machined. Write us.

#### ERIE MALLEABLE IRON COMPANY

Automotive Wheel Division Erie, Penna., U. S. A.



Higher tensile than other cast drums—60,000 to 65,000 lbs.

This alloyed brake drum metal developed by Eric Malleable Iron Company engineers has a tensile strength averaging 60,000 to 65,000 pounds per square inch—

A Brinell hardness, as cast, of 240 to 250-

And a finely divided graphitic content that makes it self-lubricating. Easily machined considering its density.



1

For extra Safety at high Speeds-

#### Use ERIE Dual Wheels

Truck and bus manufacturers who have standardized on ERIE Dual Wheels tell you it pays to use this pioneer spoke type metal wheel.

Developed by the pioneers of the spoke dual wheel-

And kept constantly ahead with improvements-

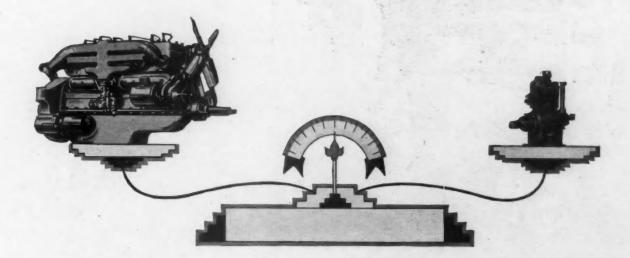
ERIB Dual Wheels reduce brake drum heat considerably through the fanning action of the spokes. Tires run cooler which means better mileage—

The exclusive Erie aligning ring simplifies mounting and dismounting— And tires run true,

The modern trend is toward buying completely assembled units. You can get Erie wheels with machined brake drums attached, bearing cups, etc. in place. Write us.



"The Wheel of Today and Tomorrow"



### The balance of motor power

More and more the question of adequate control becomes an important factor in the purchase of modern, heavy duty, motor transport vehicles. Day by day, fleet operators in ever increasing numbers are displaying brake consciousness to a marked degree.

Realizing the growing demand for a sure, quick, powerful stopping force . . . the necessity for a perfect balance of modern motor power, the more prominent manufacturers of commercial vehicles are featuring Bendix-Westinghouse Automotive Air Brakes as standard equipment. Such wide-spread acceptance of Bendix-Westinghouse control is in itself a tribute to its remarkable effectiveness.

Always ready to give you actual facts and figures, relative to the advantages of perfectly balanced Air Brake Control, when purchase of new equipment is contemplated . . . or to assist you in modernizing units now in service, a carefully trained

force of power brake engineers is available to the operator. This service is in no way obligatory and may be had by addressing the BENDIX-WESTINGHOUSE AUTOMOTIVE AIR BRAKE COMPANY at Pittsburgh, Penna.



Under the hood of this modern unit is mounted the sturdy Bendix-Westinghouse compressor. The heart of the Air Brake, this remarkably efficient device furnishes a neverfailing air source for the braking system, air horns, and other nearmatic equipment.

## BENDIX-WESTINGHOUSE Automotive A I R B R A K E S

6274



## CASH Non Change-over Business

SPEED counts today. Business must keep a step ahead of competition. That's why commercial vehicles, in order to keep pace with progress, are equipping with heavy duty or balloon pneumatic tires.

Cash in on this trend to pneumatics. Change-overs are made easy by contacting with your National Wheel and Rim distributor who carries a complete stock of wheels, rims and change-over equipment.

### NATIONAL WHEEL & RIM ASSOCIATION

63 EAST LAKE STREET, CHICAGO, ILLINOIS

A National Organization of Authorized Factory Distributors for

BUDD WHEEL COMPANY CLEVELAND WELDING COMPANY

COMPANY DAYTON STEEL FOUNDRY COMPANY
THE GOODYEAR TIRE & RUBBER COMPANY (Rim Division)

FIRESTONE STEEL PRODUCTS COMPANY

KELSEY-HAYES WHEEL CORP.

THE GOODYEAR TIRE
UNITED MOTORS SERVICE, INC. (Jaxon)

MOTOR WHEEL CORP.



SERVICE EVERYWHERE



## Greatest Sales Opportunities of the Year!

### New SCHACHT DeLuxe Series

Every sales point you need to make the truck prospect a buyer is found in the NEW SCHACHT DeLuxe Series. Outstanding performance, smart appearance, price and value — you can prove them all — when you are showing or demonstrating one of the new SCHACHT DeLuxe Models.

A model to meet every buyer's requirements—capacities 11/2 to 71/2 tons. Get the SCHACHT franchise and make 1930 a big-selling year! Write or wire for details.



DELUXE SERIES New DeLuxe Series 30—Capacity 4 Tons—Six-cylinder motor, rubber mounted—4" bore—4½" stroke—73 horsepower—7-bearing crankshaft—nickel iron cylinders—full floating double reduction rear axle—multiple disc clutch—heavy duty 4-speed transmission—7" pressed steel frame, ½" thick—Ross cam and lever steering—four-wheel Lockheed brakes with B-K booster—helper springs—radius rods—fish plates—20x9 heavy duty balloon tires with duals rear on Budd wheels.

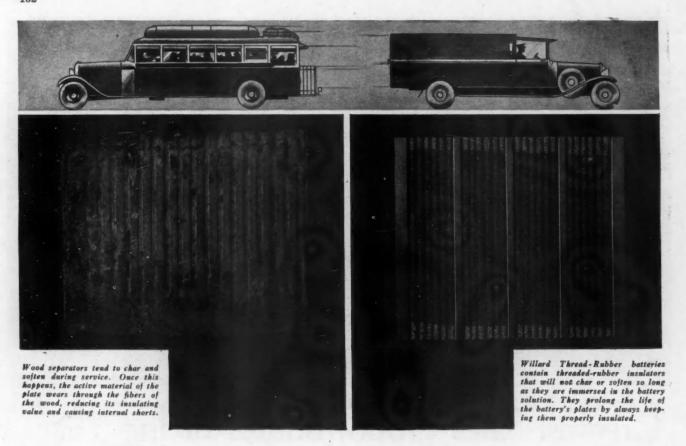
Chassis price includes full electrical equipment, special paint job, balloon tires, speedometer, and bumper. Radiator, headlights, cowl lights, and bumper chromium plated. Weight of chassis and cab 6900 lbs. Optional wheelbases.

### NOTE THESE FEATURES

New Cowl Lights
Specially Designed
Headlights
New Full Crown
Fenders
Balloon Tires
Fish Plates on
Frame
Many other important advancements
in engineering and
design.

#### THE LEBLOND-SCHACHT TRUCK CO., CINCINNATI, OHIO

Successful Truck Manufacturers for Over 20 Years



## Are little leaks inside your batteries running up your battery expense?

#### THIS FORTIFIED WILLARD BATTERY WILL END THEM

Electrical leaks are not always confined to the wiring or electrical equipment on a truck or bus. Often they occur within the battery itself. The separators between the plates become charred and softened by the battery acid. The active material of the plates wears through them. A

contact between opposite plates is established, and the battery charge leaks away. A run-down battery results, and its life is shortened.

This will not happen with a Thread-Rubber insulated Willard battery. Its insulation will last the life of the plates.

## Willard STORAGE BATTERIES

C L E V E L A N D . O H I O LOS ANGELES CALIF. \* TORONTO ONT

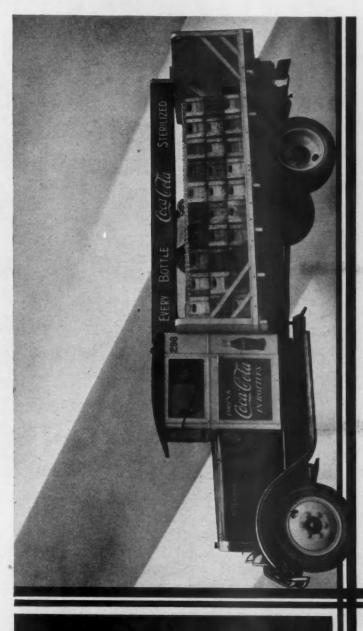


GHLR Battery, one piece rubber case, furnished in both 12-volt and 6-volt sizes.

June, 1930

The Commercial Car Journal and Operation & Maintenance

# FAMOUS PRODUCTS RIDE ON ATTERBURYS



One of a large fleet of Atterbury Trucks delivering Coca-Cola to millions of people for "the Pause that Refreshes"

world famous names of world famous truck users sign. Repeat orders speak for Atterbury desnee. And it also goes to show that indhis year of thrift, men investing in motor trucks realize that the better truck is the least expensive.

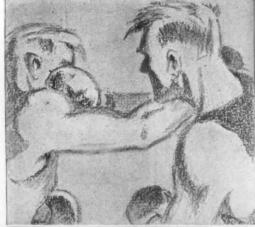
terbury production is sufficiently flexible to make each truck practically tailor-made to fit its job. DEALERS: The Atterbury story is worth writing

Atterbury trucks are the product of America's oldest exclusive truck manufacturer. The complete

line includes Sixes from 1 to 4 tons capacity. At-

ATTERBURY MOTOR CAR COMPANY Elmwood Avenue at Hertel Buffalo, N. Y.

ATTERBUR



## Hammering ton-mile costs

Carry more tons with practically no increase in operating costs—with the Timken Six-Wheel Unit.

It's amazing what a hammering that added driving rear axle gives to ton-mile costs.

A lot more traction — a lot more brake capacity (four or even six wheel brakes) — flexibility that fits the ground; these mean an ability to handle immense loads, and to get out and stay out of trouble.

The amazing success of Timken Six-Wheel Units—in all types of heavy duty hauling, in all kinds and conditions of service—is simply one more convincing evidence as to the fundamental economic soundness of Timken Worm Drive.

THE TIMKEN-DETROIT AXLE COMPANY
DETROIT, MICHIGAN



## TIMER SIX UNIT

June, 1930

The Commercial Car Journal and Operation & Maintenance

## BROWN -LIPE

### TRANSMISSIONS



IN THIS FAGEOL Model 10-66, 10-ton truck-trailer, by The Fageol Motor Truck Co., Oakland, California, there are two Brown-Lipe Transmissions. One is the Brown-Lipe Model 55 4-speed, unit-mounted job. The other is the Brown-Lipe Model 60, 3-speed, amidship mounted, auxiliary transmission.



## IN THIS TWELVE WHEELER

AND FOR EVERY
HEAVY-DUTY
REQUIREMENT

## ASSOCIATED Spicer COMPANIES

BROWN-LIPE CLUTCHES and TRANSMISSIONS

BROWN-LIPE GEAR CO. SYRACUSE NEW YORK

The Commercial Car Journal and Operation & Maintenance

SALISBURY FRONTand REAR AXLES

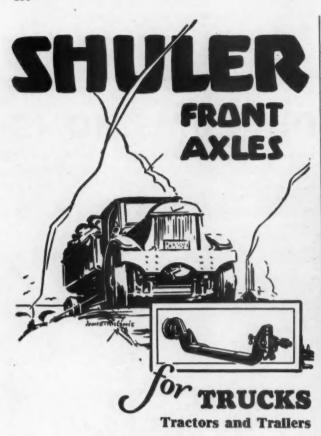
SPICER UNIVERSAL JOINTS

SPICER MFG. CORP.

PARISH FRAMES and STAMPINGS

PARISH PRESSED STEEL CO. READING PENNA.

June, 1930



### SKILL

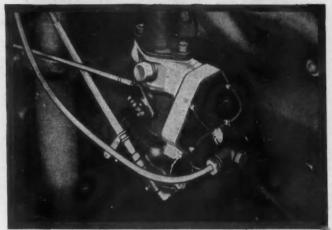
You cannot lay down rules which will guide an inexperienced man in making good front axles.

Skill, based on experience, is the only sure guide.

### SHULER AXLE CO.

LOUISVILLE KENTUCKY

## It's a BIG



### **HANDY YEAR**

To the Fleet Owners of America:

March, 1930, was a record month for Handy Governor sales. April exceeded it. May promises even a greater total.

To an almost amazing degree, this increased business has featured our Handy models for Ford and Chevrolet Trucks.

We see in this achievement a logical result of your long, consistent experience with our product. And we predict for you a year in which your Handy Governor benefits will far exceed any record of the past.

Haulage experts today know by experience that Handy Governors PAY. They pay just as generously with light trucks as with the larger units of your fleet. Tires and brakes last twice as long. Motor and chassis repairs are reduced. Accidents become almost negligible. Give your light trucks a square deal!

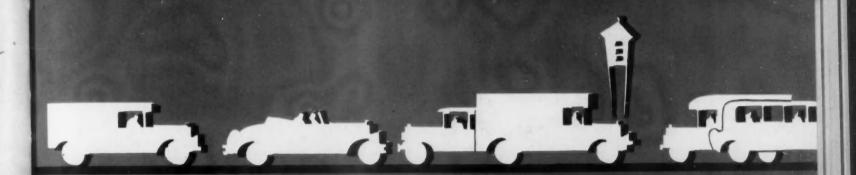
The Handy Governor is designed, built and guaranteed by the world's largest producer of engine governors, and is serviced by a nation-wide organization of Handy distributors.

Keep in touch with our nearby distributor!

HANDY GOVERNOR CORPORATION
3909 West Fort Street Detroit, Michigan

HANDY GOVERNOR

## EQUIPMENT





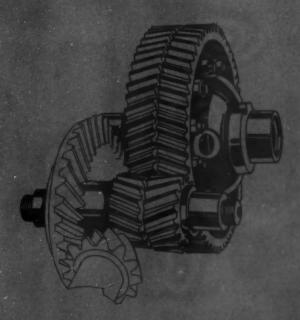
AXLES
SPRINGS
BUMPERS
EATON-LITES
EASY-ON CAPS

PERFECTION HEATERS

ATA and knowledge gained through intimate contact with the automotive industry since its pioneer days, aid Eaton in being of real service to those granting the opportunity. To serve in such an advisory capacity is considered a distinct privilege, and a valued one.

## EATONN AXLES

FIVE YEARS ago Eaton introduced the Herringbone Double Reduction gearing principle in truck axles. It was new to the industry but not new to Eaton. Several years of research and development work preceded its introduction. Evidence offered by operators of trucks and buses equipped with this type of Eaton Axle furnishes conclusive proof of its ability to withstand abuse and to give the most miles of uninterrupted service.



Truck and bus manufacturers are invited to submit their axle problems to us, and share our many years of experience in this highly specialized field.

THE EATON AXLE & SPRING COMPANY





### 1930—GRAMM'S 30th ANNIVERSARY

Since Pioneering in the Motor Truck Industry

B. A. Gramm has written an outstanding article on

HOW TO SELL MOTOR TRUCKS WITH PROFIT

to both Dealer and Operator. Based on 30 Years Experience.

### MOTOR CAR AND TRUCK DEALERS

can obtain this valuable advice free of cost by writing him direct.

GRAMM is on the air—WOWO, Fort Wayne (1160 k.c.—258.5 meters) every Monday and Thursday 9:30 P.M. Central Daylight Saving or Eastern Time.

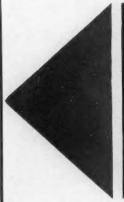
POWERFUL and FAST - - - BUILT to LAST!

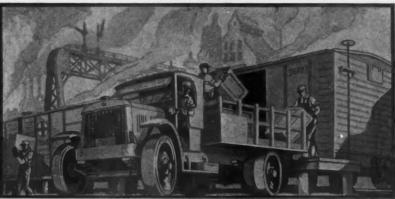


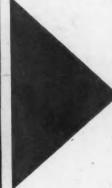
GRAMM MOTORS, Inc.

Builders of fine Motor Trucks, Vans and Coaches

Truck Capacities 1½ to 5 Ton







### Keep Your Pay Load Moving— Insure Against Gear Troubles with Dixon's

As long as the payload is kept moving, truck transportation can be profitable. The ideal way to keep trucks out of the shop for transmission and differential repairs, is by insuring against gear troubles with DIXON'S 677, the 100% lubricant.

With its film of graphite and film of grease,

Dixon's provides double protection to hard worked parts. It gives constant lubrication—it won't get thin and run—it won't channel, BUT, IT WILL cling to the gears! Send for details of the Dixon Dealer Plan, given in Bulletin No. 112-G. JOSEPH DIXON CRUCIBLE CO., Jersey City, N. J.

### DIXON'S 677 Graphited Grease

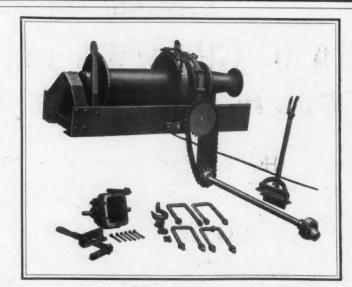
for dependable power

### MODEL W75

(Genuine Old Hickory)

### WINCH

The Genuine Old Hickory Model W75 Winch is designed to give dependable power when and where it is required. Built with a 500 foot cable capacity at 50 to 60 line feet per minute. Well lubricated and Timken Bearing Equipped.



This winch is increasing in popularity due to its practical and sturdy construction. It is a valuable piece of equipment and is preferred wherever dependable winch power is needed. This Company also makes Genuine Old Hickory Kingham Trailers and Kentucky Trailers and Winches as well as Transports. New catalog will be sent upon request. No obligation.

Model W75 can be furnished with power take off for any truck having opening in transmission for this purpose.

KENTUCKY WAGON MFG. CO., INC. LOUISVILLE, KY.

ECONOMIC TRANSPORTATION NECESSITIES SINCE 1879

"Oil is as good ...if not better"



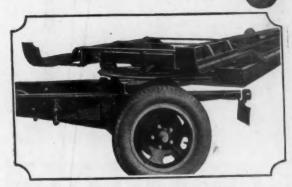
The trucks of the Oakland San Jose Transportation Company are on the road day and night . . . week after week, under extraordinarily hard usage. The Skinner Oil Reclaimer has shown them marked economy coupled with unexcelled performance. You, too, will find this modern equipment an excellent investment. Write direct for complete prices and description.

SKINNER AUTOMOTIVE DEVICE CO., INC. 2231 Dalzelle, Cor. Fourteenth, Detroit, Mich.

#### SKINNER OIL RECLAIMER

KINGHAM TRANSPORT TRAILERS

open NEW profit possibilities!

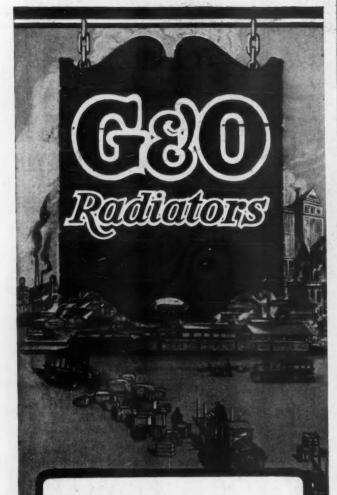


The close up shows the ease of swivel and the ex-treme freedom of the attachment. Few moving or wearing parts lessen repair or replacement expense. Timken equipped.

BEFORE you decide on the Transport Trailer that you want, look at what Kingham has to offer. It is always wise to investigate such advantages as the Half Elliptic under slung springs, low loading height, Alemite-Zerk Lubrication, Timken Bearings and detachable hitch.

Kingham Transport Trailers come in three sizes to meet your exact hauling requirements. Ask for our new catalog. See what Kingham offers before deciding on your purchase.

> KINGHAM TRAILER CO., Inc. Corner Floyd and Gaulbert Streets LOUISVILLE, KY.



### **RADIATORS**

for

Commercial Vehicles

SPECIALIZING for 15 years in the design and manufacture of radiators for commercial vehicles, The G & O Manufacturing Co. occupies a preeminent position in this industry. Every type of heavy-duty radiator is obtainable. Manufacturers and fleet owners are requested to write for complete information regarding G & O Radiators.

The G & O Manufacturing Co.

Radiator Manufacturers Since 1915

New Haven

Conn.



THIS TRUCK is just "getting by." Paying expenses, all right, and more—but the extra load, that would be all profit to the owner, had to be left behind. Springs wouldn't stand up. Sell 'em on Trainor Safe-Tsprings; they'll take care of that extra load. They'll increase the owner's profit—and give you a nice profit, too!



What a day! The poor fellow has been bounced around on his truck for eight hours, and he's feeling pretty low. Probably have to knock off tomorrow and get a real rest. And if he had his way about it, you can bet your last dollar there'd be Trainor Safe-T-Springs on that truck he drives! They make the driver's life a soft one.



Owners of "Slow-poke" trucks lose money in these days of high speed. Nothing wrong with the engines—but the loads aren't protected against side away and shock. Trainor Safe-T-Springs make speed trucks out of the lazy ones, by preventing racking and jolting. Safe-T-Springs absorb the shocks before they reach the chassis or load.



"Here! Load on another

ton!" That's what truck owners can say when they've installed Trainor Safe-T-Springs. Every installation is an investment that pays big dividends in actual cash profits every day the truck is used.

Dealers everywhere are building a big profitable business on this new accessory. Every light truck owner in your community is a prospect. Get your share of the business. Write today.

A Complete Range of Springs for All Types of Motor Vehicles

TRAINOR
National Spring Co.
Newcastle, Indiana



#### They Reach and Turn the Awkward Nuts That Baffle Other Tools

DUOHEX-BOX
"Superrenches"
reach into the narrow
corners—and work—
where other tools are
licked. A swing of 30°—
less than 1/10 of a full
circle—will turn nuts
completely with the
Double Offset pattern,
which has a different size
opening in each head. The
Single Offset pattern—
with the same opening in
both heads—works readily in an arc as small as
15°.

Twelve-point openings never slip—never round the corners of a nut. And with their extra length—abrupt offset—and thin head walls—these laborsaving wrenches turn the trick on the most difficult jobs.

True "Superrenches," forged from Chrome-Molybdenum steel, heattreated and Chrome-plated; finished bright. Furnished singly, or in Sets.

Every "Superrench" Is Guaranteed Against Breakage

"SUPERRENCH"
(Chrome-Molybdenum)
DUOHE.X-BOX
PATTERNS

J. H. WILLIAMS & CO.

"The Wrench People"

New York BUFFALO Chicago





Supplied also in four handy assortments, packed in strong sheet metal box.



Just the Dandelions

Isn't Weeding the Garden!

NOR is digging out worn piston rings properly repairing a motor. There are many other component parts which may be worn and should also be replaced. A ring won't take out piston slap or adjust a pin fit in its bearing.

Replace all worn parts when the motor is down and save costly repairs later on!

For pistons and pins of uniform quality specify Arrow Head (grey iron) or Arrowlite (aluminum alloy) Pistons and Arrow Head electrically heat-treated Pins. In sized, balanced, fitted piston and pin assemblies, they require no separate "miking"—no sorting of pins to pistons—no reaming of pin holes. Write today for latest catalog.

Tregional plants to serve you BUFFALO—CHICAGO—MINNEAPOLIS
Supported by a national chain of service warehouses

Arrow Hoad
Panel
Russ Rus
Begendahia

Quick service on the 5,000 most-calledfor fits and applications, including practically "all motors, all years, all models."

ARROW HEAD STEEL PRODUCTS COMPANY
Chicago MINNEAPOLIS, MINN. New York

nta Boston Buffalo
Kansas City Los Angeles San Francisco
Canadian Warehouse: 277 William St., Chatham, Ontario
JOBBERS' STOCKS IN ALL LEADING CITIES

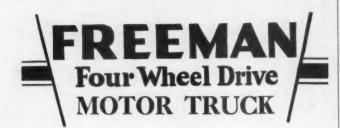
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A DIVISION OF HOUDAILLE-HERSHEY CORPORATION Pioneers and World's Largest Producers of Hydraulic Double Acting Shock Absorbers



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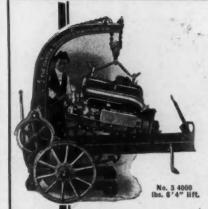
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No jar on the spine. No friction on your back. No wrinkled or worn clothes. No body fatigue-you ride on air. (Gas Tanks on Modern Trucks are hung on the side)

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Philadelphia Penna.



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SPEEDING TO "MAKE UP" WASTED TIME!

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458 Hanna Bldg. Cleveland, Ohio



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SATISFIED USERS ARE GIVING REPEAT ORDERS

for the

SIDE DUMP BODIES THAT SELL ON THEIR MERITS

SEE THEM AND YOU WILL APPRECIATE THEM

WRITE FOR CATALOGUE "C"

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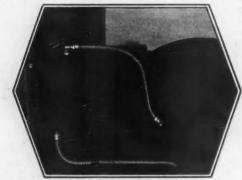
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The interior finish is of the best three ply wood, which is durable and less noisy than cab with inside finish of steel.

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### HIGHLAND FOR CABS

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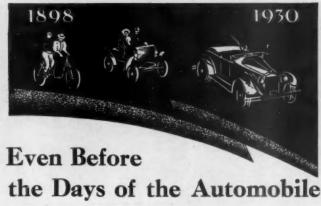
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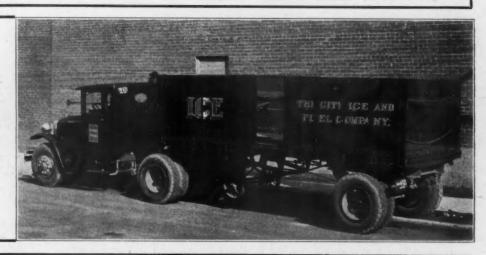
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1930

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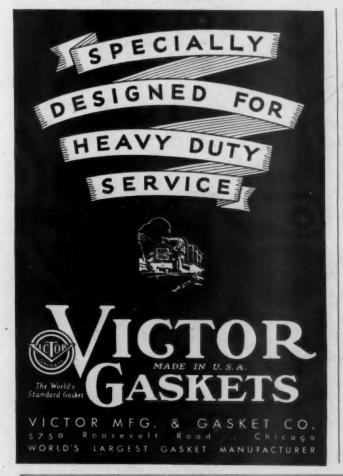
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Commercial vehicles demand commercial carburetors. They need heavy-duty carburetion that cannot vibrate apart or shake out of adjustment.

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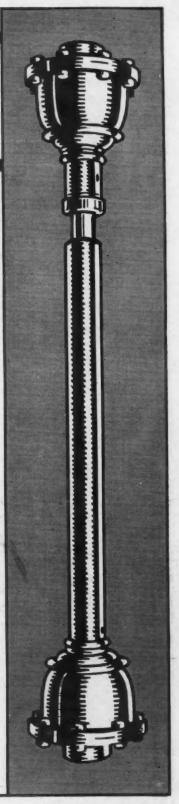
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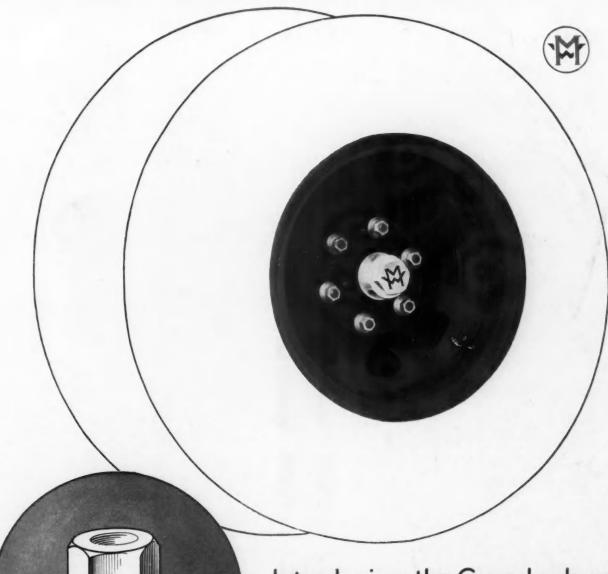
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June, 1930

The Commercial Car Journal and Operation & Maintenance



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## ... Low Operating Cost -Value Without Equal

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